
GPS AutoSteer System

Installation Manual



Supported Vehicles

Ag-Chem Rogator

854

(1997-2002 models)

LEGAL DISCLAIMER

Note: Read and follow ALL instructions in this manual carefully before installing or operating the AutoSteer system.

Note: Take careful note of the safety information in the Safety Information section and throughout this manual.

The manufacturer disclaims any liability for damage or injury that results from failure to follow the instructions and warnings set forth herein.

Please take special note of the following warnings:

1. There is NO obstacle avoidance system included in the manufacturer's product. Therefore, users must always have an operator on the equipment when the AutoSteer system is in use to look for any obstacles including people, animals, trees, ditches, buildings, etc.
2. During installation of the AutoSteer system and during the Calibration and Tuning processes the vehicle's wheels turn from side to side and the vehicle moves. Be sure that all people and obstacles are clear of the vehicle before installation, calibration and tuning, or use of the AutoSteer system.
3. Use of the AutoSteer system is NOT permitted while the vehicle is on public roads or in public areas. Ensure that the system is OFF before driving on roads or in public areas.

Special Requirements

Tools

This list consists of the tools required to complete the installation. The installer is assumed to have a complete set of common installation tools.

Allen Hex Key 1/8"	3/8" open wrench	13mm open wrench
Allen Hex Key 3/16"	7/16" open wrench	16mm open wrench
Allen Hex Key 1/4"	1/2" open wrench	17mm open wrench
Allen Key 5/32"	9/16" open wrench (2x)	18mm open wrench
Allen Key 5/16"	5/8" open wrench	19mm open wrench
Hacksaw with steel cutting blade	11/16" open wrench	22mm open wrench
#1 Phillips screwdriver	3/4" open wrench	24mm open wrench
#2 Phillips screwdriver	13/16" open wrench	Wire cutter small
Cleaning rags	7/8" open wrench	Cleaning brush
Tape measure (12ft minimum)	1" open wrench	Ten Foot Ladder
5000 psi Pressure Gauge with a Short Hose and 1/8" Test Port Coupler that meets the SAE J1502 standard	15/16" open wrench	1/4 - 20 Tap

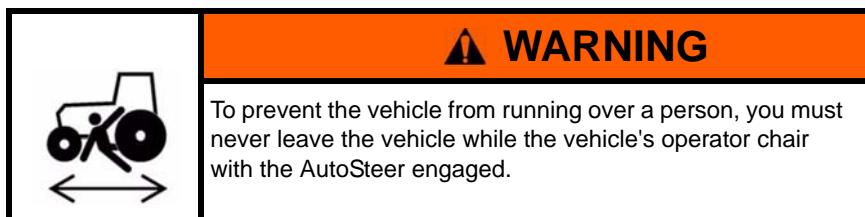
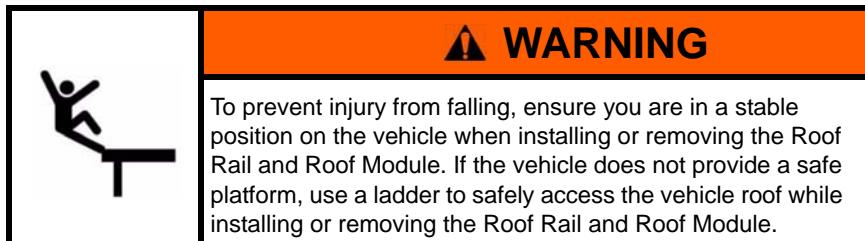
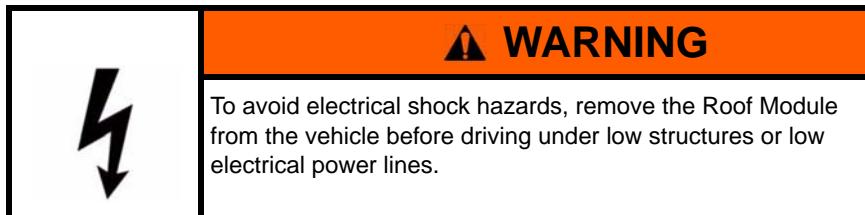
Safety Information

Warning Alerts

The AutoSteer system installer and manufacturer disclaim any responsibility for damage or physical harm caused by failure to adhere to the following safety requirements:

- As the operator of the vehicle, you are responsible for its safe operation.
- The AutoSteer system is *not* designed to replace the vehicle's operator.

Note: Verify all screws, bolts, nuts, hose connections and cable connections are tight after the final installation of the AutoSteer system on the vehicle.





⚠ WARNING

High-Pressure Fluid Hazard

Read this manual before installation. Wear hand and eye protection while performing hydraulic system maintenance. Relieve hydraulic system pressure before servicing the hydraulic system.



⚠ WARNING

To understand the potential hazards associated with the operation of AutoSteer equipment read the provided documentation before installing the AutoSteer system on a vehicle.



⚠ WARNING

To prevent the accidental engagement of AutoSteer and loss of vehicle control while driving on roads, shut down the AutoSteer system (exit the program). Never drive on roads or in public areas with the AutoSteer system turned on.

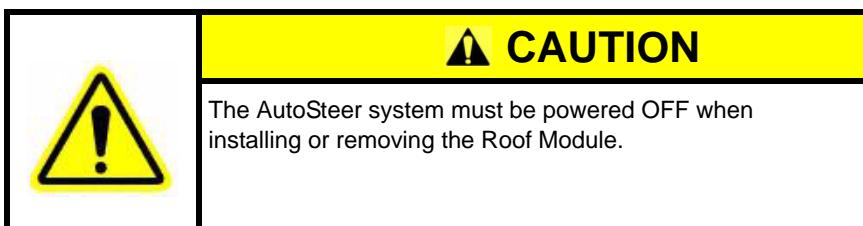
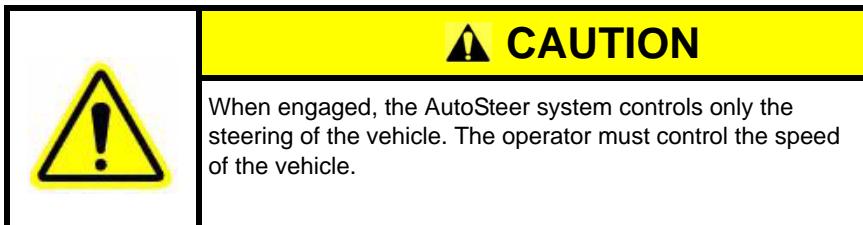
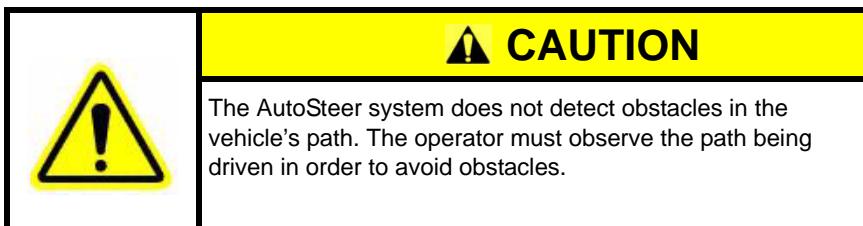
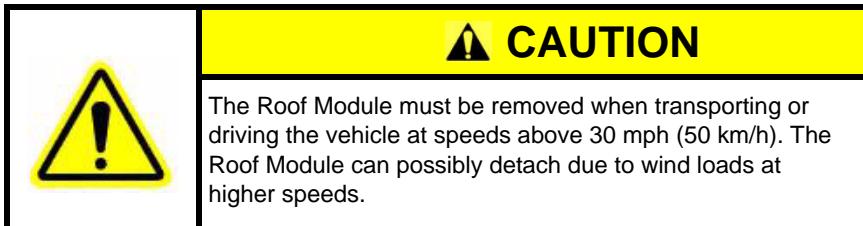


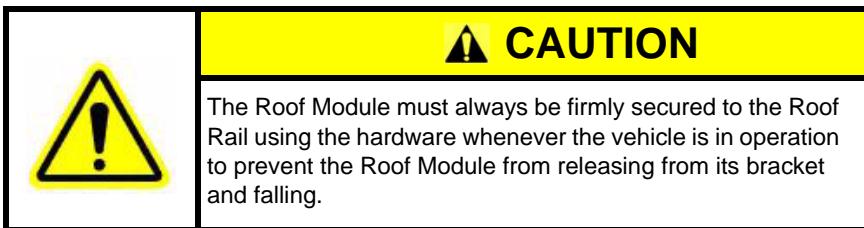
⚠ WARNING

Do not stand close to the wheels and do not move the vehicle while you are adjusting the Relief Valve. Turn off the engine and engage the parking brake before standing under or next to the vehicle.

Caution Alerts

The AutoSteer system installer and manufacturer disclaim any responsibility for damage or physical harm caused by failure to adhere to the following safety requirements:





Vehicle Requirements

The vehicle steering and hydraulic systems must be in good working order before installing the AutoSteer system. Check for loose or worn parts. Before installing the AutoSteer system drive the vehicle and confirm that it steers straight and the wheels can be turned from lock to lock. Check the steering system hydraulic hoses and connections to ensure there are no oil leaks.

The vehicle electrical system and battery must be in good working order.

The vehicle should be fully cleaned before installing the AutoSteer system. A clean vehicle will improve the overall installation and cable routing and will also reduce the chance for oil contamination when the hydraulic connections are opened. It is important to clean the area around the steering cylinders, frame, hydraulic pump, and cab.

Important Information

Note: Verify all screws, bolts, nuts, hose connections and cable connections are tight after the final installation of the AutoSteer system on the vehicle.

Technical Support

Refer to your Display user manual for technical support information.

Contact Information

Refer to your Display user manual for contact information.

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Installation Overview

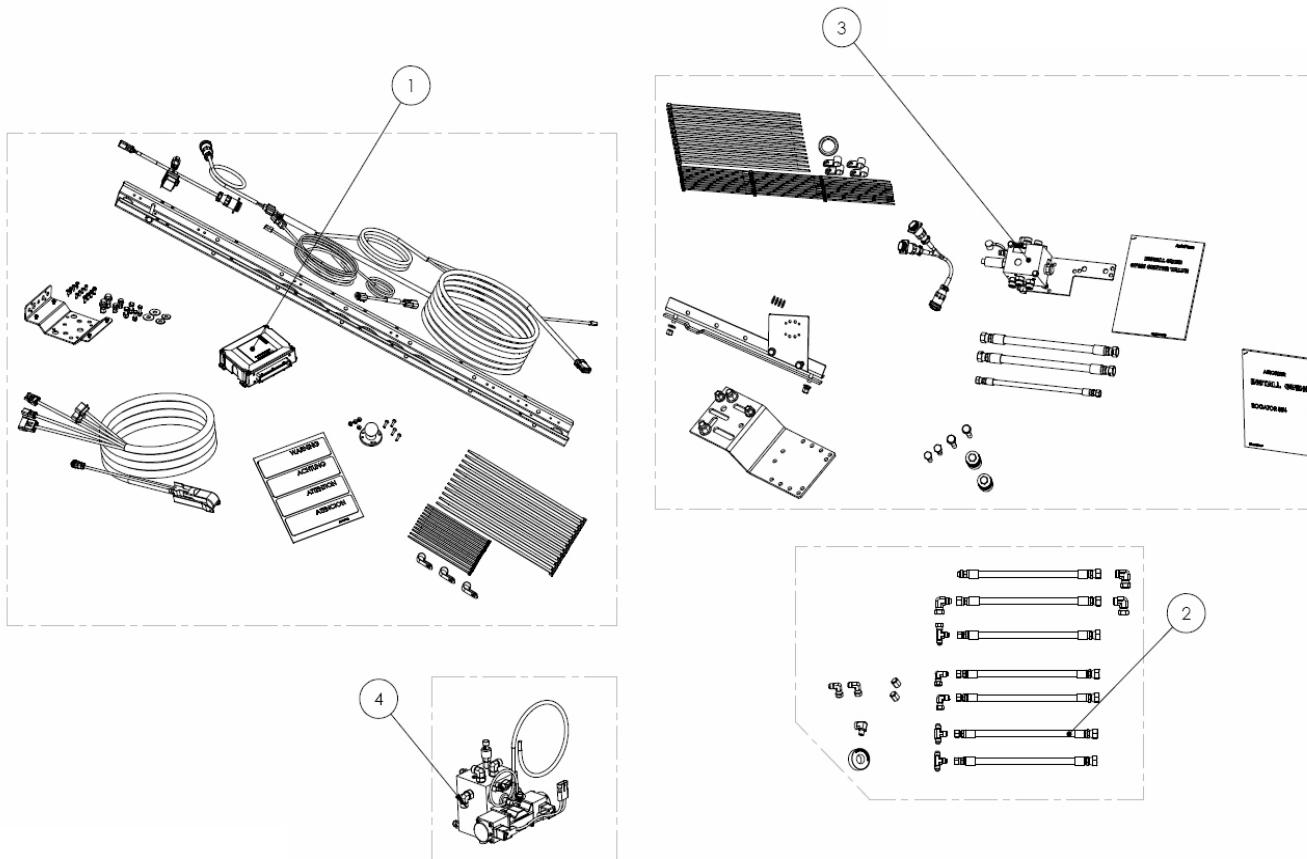
This **Installation Overview** chapter contains information in the following sections:

- *Kit Overview*
 - *Assemblies*
 - *Kit Wheeled Components*
 - *Hose Kit Components*
 - *Bracket Kit Components*
- *Installation Procedure Outline*
- *Cable Diagram*

Kit Overview

The Ag-Chem Rogator 854 sprayer AutoSteer kit (P/N: 188-0021-01) contains the components shown in *Figure 1-1*.

Figure 1-1 Ag-Chem Kit Components (P/N: 188-0021-01)



Note: Component size is not shown to scale.

Table 1-1 Ag-Chem Kit Components (PN: 188-0021-01)

Item	Component	Part Number
1.	Wheeled Kit, without Valve	153-0009-01
2.	Hydraulic Hose Kit	500-0280-01
3.	Display Bracket Kit	152-0019-01
4.	Steering Valve, 7.9 GPM	500-0008-02

Assemblies

The Ag-Chem vehicle installation kit contains the following components:

- *Kit Wheeled Components*
- *Hose Kit Components*
- *Bracket Kit Components*

Kit Wheeled Components

Figure 1-2 Kit Wheeled Components (PN: 153-0009-01)

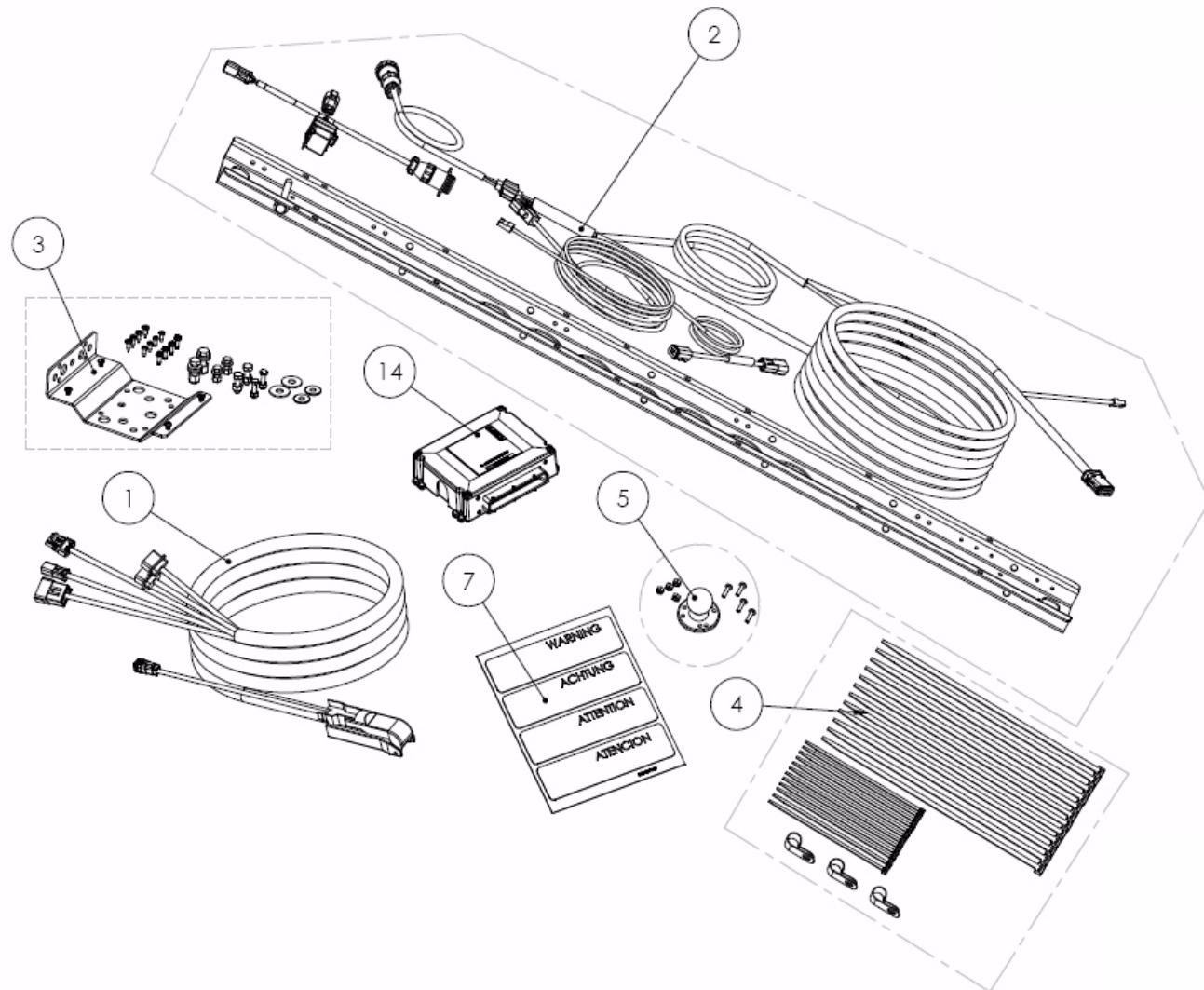


Table 1-2 Installation Kit Sub-Assembly Components (PN: 153-0009-01)

Item	Component	Part Number
1.	SA Module Harness	201-0371-02
2.	Common Installation Kit	200-0497-02
3.	SA Module Bracket	200-0190-01
4.	Mounting Hardware (JD-8000 Series)	200-0076-01
5.	Display Mounting Base Assembly	200-0508-01
7.	Warning Labels	603-0074-01
14.	SA Module Assembly	200-0206-01

Hose Kit Components

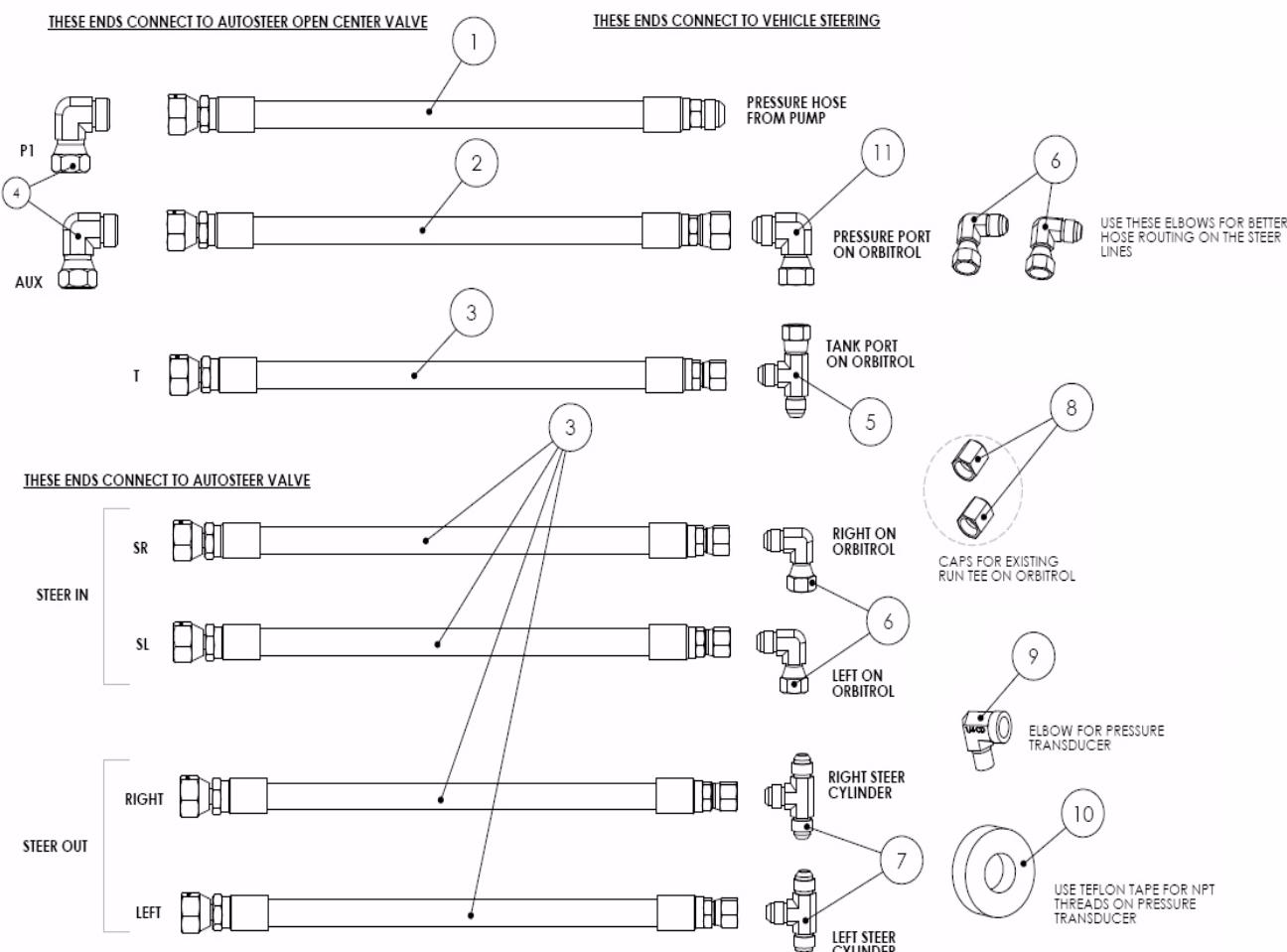
Figure 1-3 Ag-Chem Rogator 854 Hose Kit (PN: 500-0280-01)

Table 1-3 Ag-Chem Rogator 854 Hose Kit Components (PN: 500-0280-01)

Item	Component	Part Number
1.	Hose Assembly 3/8" x 54", -8F ORFS x -8M JIC	F45ITC-JC03080806-54
2.	Hose Assembly 3/8" x 54", -8F ORFS x -8F JIC	F45ITC-JC06080806-54
3.	Hose Assembly 3/8" x 54", -8F ORFS x -6F JIC	F45ITC-JC06080606-54
4.	Nut Elbow Adapter #8, S-LK, F-M	8 C6LO
5.	Run Tee -6 JIC	6 R6X-S
6.	Swivel Nut Elbow Adapter -6 JIC	6 C6X-S
7.	Union Tee -6 JIC	6 JTX-S
8.	Female Cap -6 JIC	6 FNTX-S
9.	F-M 1/4" Street Elbow Adapter	1/4 CD
10.	Teflon Tape, 1/2" x 520"	511-0001-01
11.	Swivel Nut Elbow -6 JIC	8 C6X-S

Bracket Kit Components

Figure 1-4 Bracket Kit Components (PN: 152-0019-01)

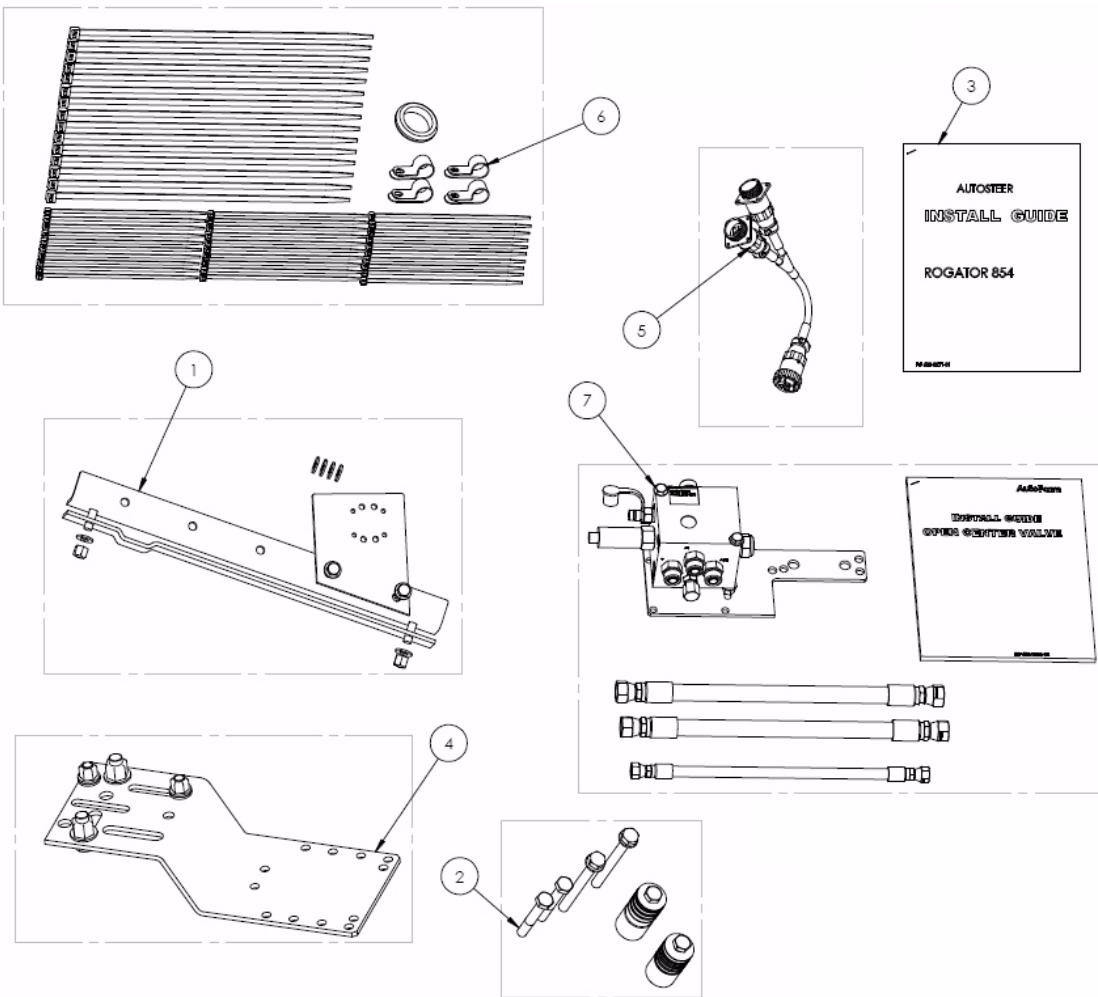


Table 1-4 Bracket Kit Components (PN: 152-0019-01)

Item	Component	Part Number
1.	Display Bracket (JD-9650)	200-0137-03
2.	Roof Bolts (Ag-Chem)	200-0439-01
3.	Installation Guide	602-0211-01
4.	Valve Bracket	200-0446-01
5.	Power Splitter Cable	201-0024-01
6.	Cable Routing Hardware (John Deere Combine)	200-0174-01
7.	Open Center Valve Kit - 15 GPM	200-0273-02

Installation Procedure Outline

Note: The system interconnect cable diagram in the *Cable Diagram* on page 8 of this chapter shows the AutoSteer electrical connections.

1. Verify shipped components.

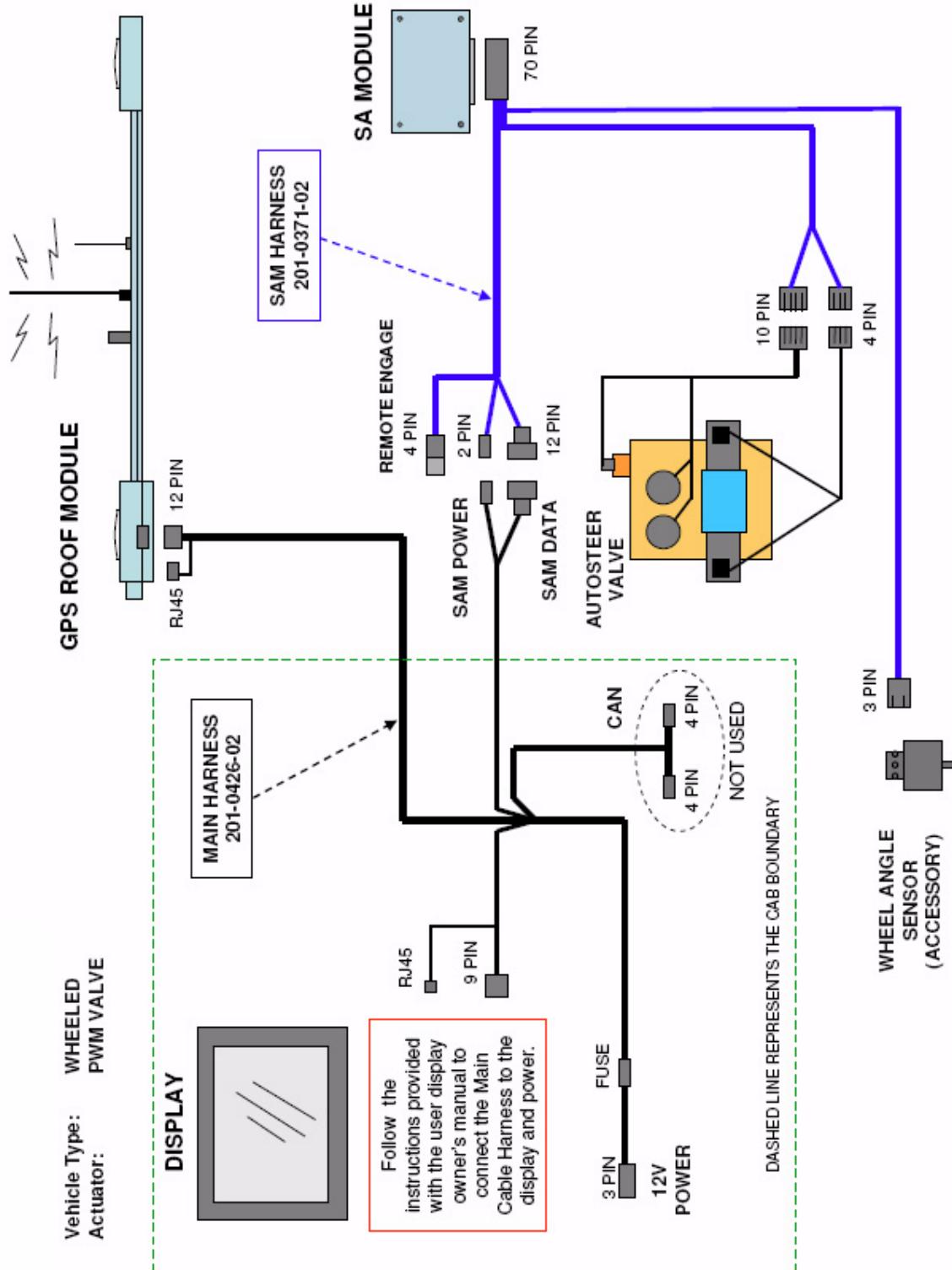
Note: *Step 2, Step 3, Step 4, Step 5, Step 8, Step 9, and Step 14* are skipped if installing an electric steering actuator.

2. Install the Hydraulic Steering Valve Assembly.
3. Install the Hydraulic Hoses.
4. Install the Wheel Angle Sensor. (Optional)
5. Install the SA Module.
6. Install the Roof Rail on the cab roof.
7. Install the Roof Module on the Roof Rail.
8. Install the SA Module Harness and route cables to the various sensors.
9. Route SA Module Harness towards the cab.
10. Install the Display Bracket and the RAM Mount Ball inside the cab.
11. Install the Display using a RAM Mount Arm.
12. Install the Main Cable Harness and route cables to Roof Module and power connector.

Note: Instructions for connecting the vehicle kit cables to the Display can be found in the Display user manual.

13. Connect the Main Cable Harness to the Display Harness.
14. Connect the Main Cable Harness to the SA Module Harness.
15. Verify all connectors are properly coupled and secured.
16. Power ON the AutoSteer system.
17. Calibrate the vehicle.
18. Tune the vehicle.
19. Verify the system has been installed properly and operates satisfactorily.

Cable Diagram



Assemble and Mount the Hydraulic Valves

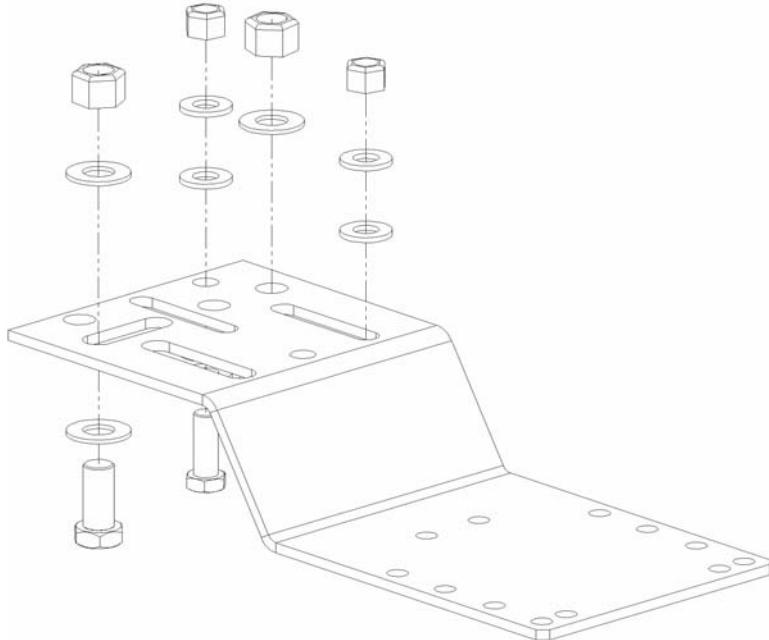
The **Assemble and Mount the Hydraulic Valves** chapter contains information in the following sections:

- *Mounting the Steering Valve*
 - *Install the Steering Valve Bracket*
 - *Install the Steering Valve*
- *Mounting the Open Center Hydraulic Valve*
 - *Install the Open Center Hydraulic Valve Bracket*
 - *Install the Open Center Hydraulic Valve*

Mounting the Steering Valve

The Steering Valve bracket is shown in *Figure 2-1*.

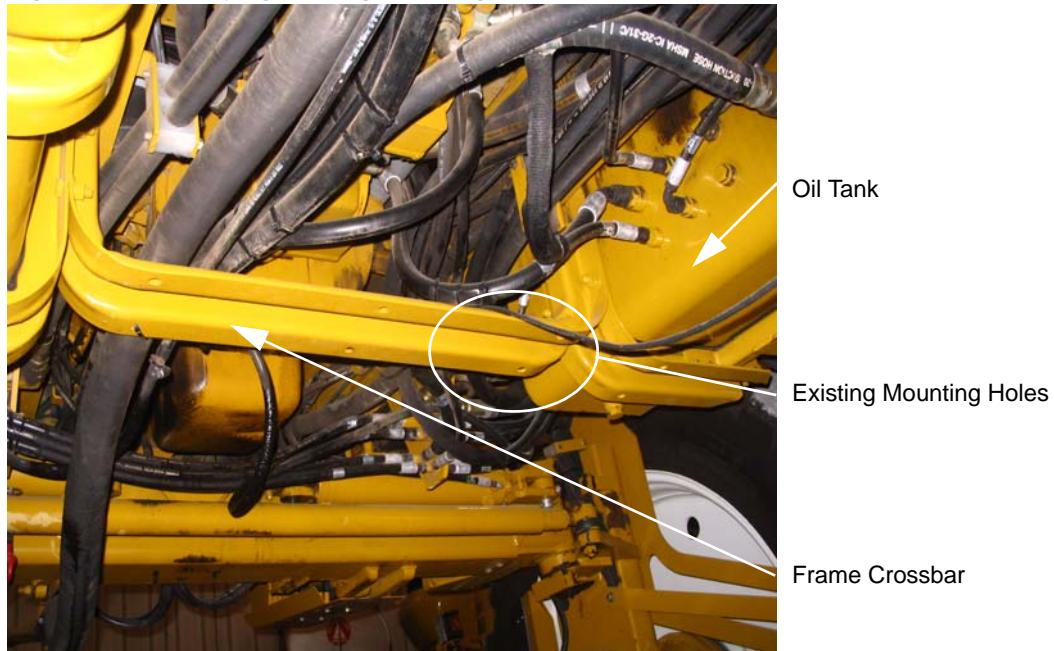
Figure 2-1 Steering Valve Bracket Overview



Install the Steering Valve Bracket

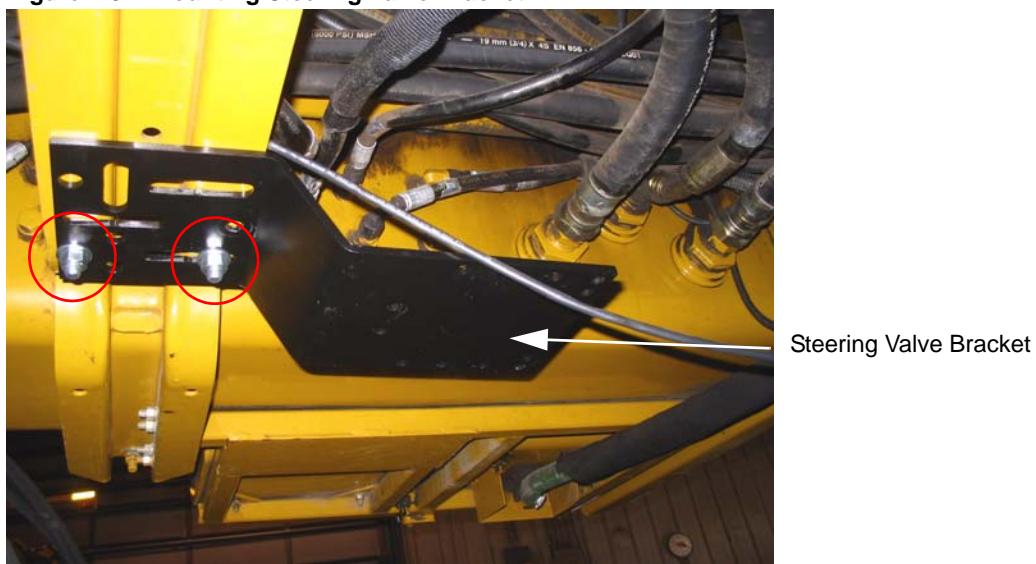
- Identify the frame crossbar located under the vehicle. *Figure 2-2* shows the location of the holes on the frame crossbar (near the oil tank) for mounting the Steering Valve bracket.

Figure 2-2 Identifying Existing Mounting Holes on Crossbar



- The Steering Valve bracket is provided with a set of 1/2" and 5/8" bolts as shown in *Figure 2-1*. Use these bolts for mounting the bracket on frame crossbar holes as shown in *Figure 2-3*. Mount the Steering Valve bracket under the crossbar and pointing towards the back of the sprayer. Secure using two 1/2" bolts and locknuts. Use two flat washers under each bolt head and two flat washers under each nut.

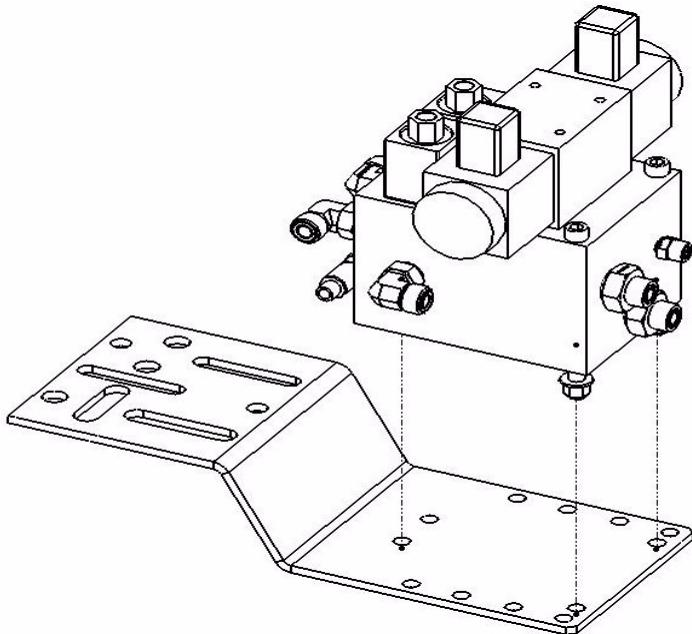
Figure 2-3 Mounting Steering Valve Bracket



Install the Steering Valve

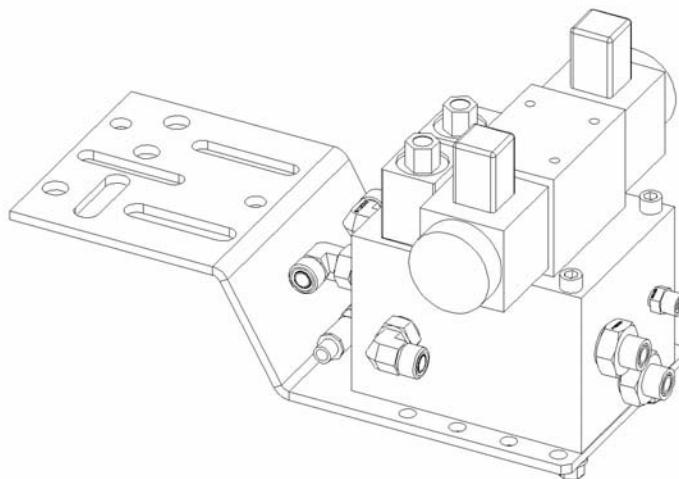
1. Mount the Steering Valve to the Steering Valve bracket. Align the three long Allen screws to the bracket mounting holes as shown in *Figure 2-4*.

Figure 2-4 Mounting Steering Valve to Steering Valve Bracket



2. Use a 5/16" Allen key to tighten the three long Allen screws. Secure the Steering Valve in the position shown in *Figure 2-5*.

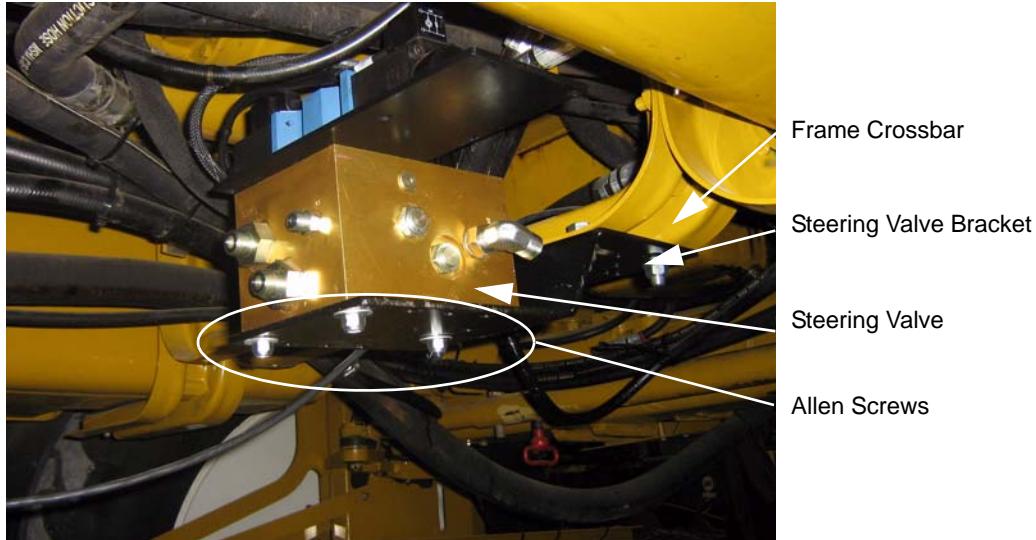
Figure 2-5 Combined Steering Valve and Steering Valve Bracket



Mounting the Open Center Hydraulic Valve

3. *Figure 2-6 shows the final installation of the Steering Valve.*

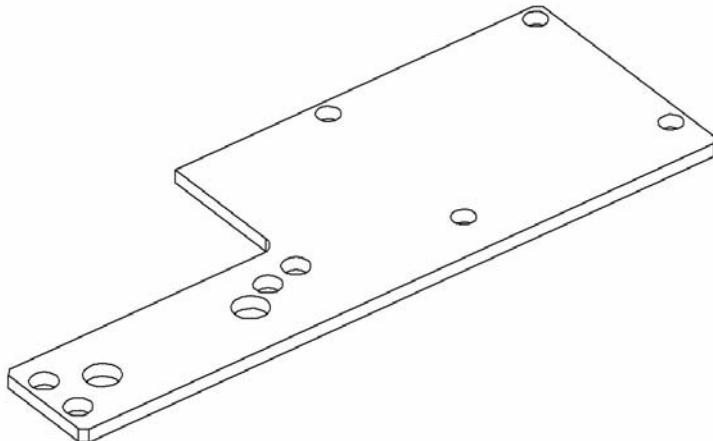
Figure 2-6 Complete Installation



Mounting the Open Center Hydraulic Valve

An Ag-Chem Rogator 854 sprayer requires an Open Center Hydraulic Valve. The Open Center Hydraulic Valve block provides oil on demand to the Steering Valve and protects the pump from over-pressure while in AutoSteer mode. The Open Center Hydraulic Valve bracket is shown in *Figure 2-7*.

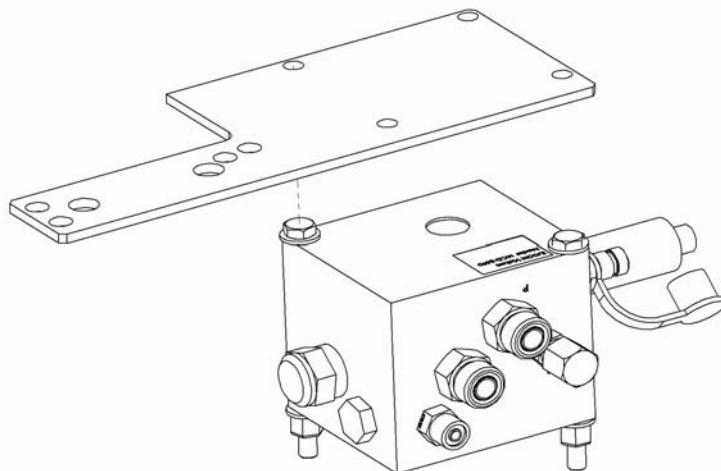
Figure 2-7 Open Center Hydraulic Valve Bracket Overview



Install the Open Center Hydraulic Valve Bracket

1. Use the two long Allen screws and the Open Center Hydraulic Valve bracket provided with the Open Center Hydraulic Valve kit for mounting the Open Center Hydraulic Valve. See *Figure 2-8*.

Figure 2-8 Mounting Open Center Hydraulic Valve to Open Center Hydraulic Valve Bracket

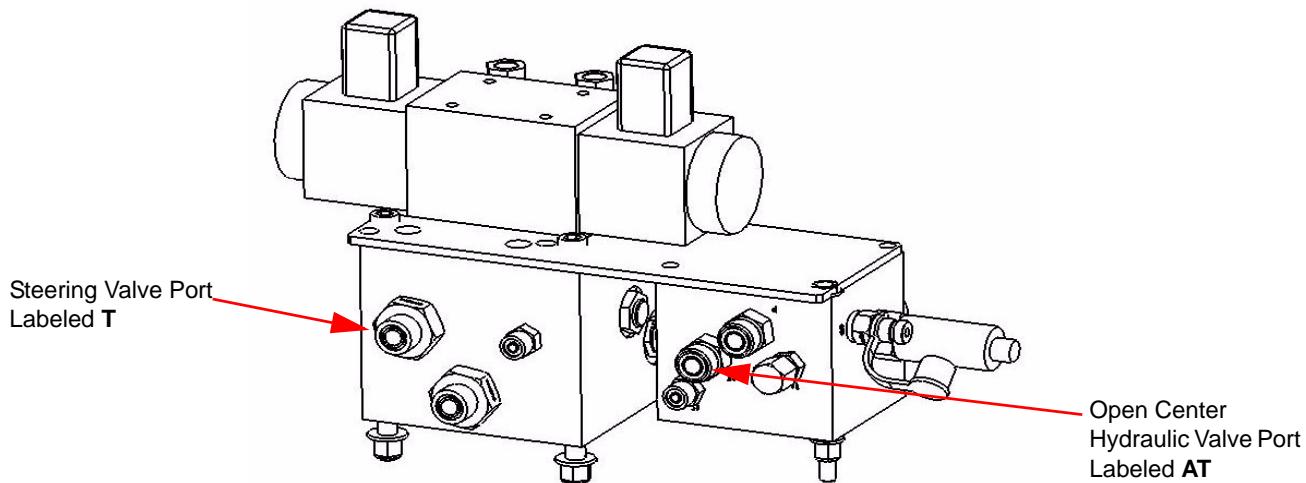


Note: The bracket might already be mounted to the Open Center Hydraulic Valve depending on your installation kit.

Install the Open Center Hydraulic Valve

1. Use a 5/16" Allen key to tighten the two long Allen screws. Secure the Open Center Hydraulic Valve in the position shown in *Figure 2-9*. Ensure that the Steering Valve tank port (labeled **T**) and the Open Center Hydraulic Valve return port (labeled **AT**) are located on the same side.

Figure 2-9 Securing the Open Center Hydraulic Valve to the Bracket

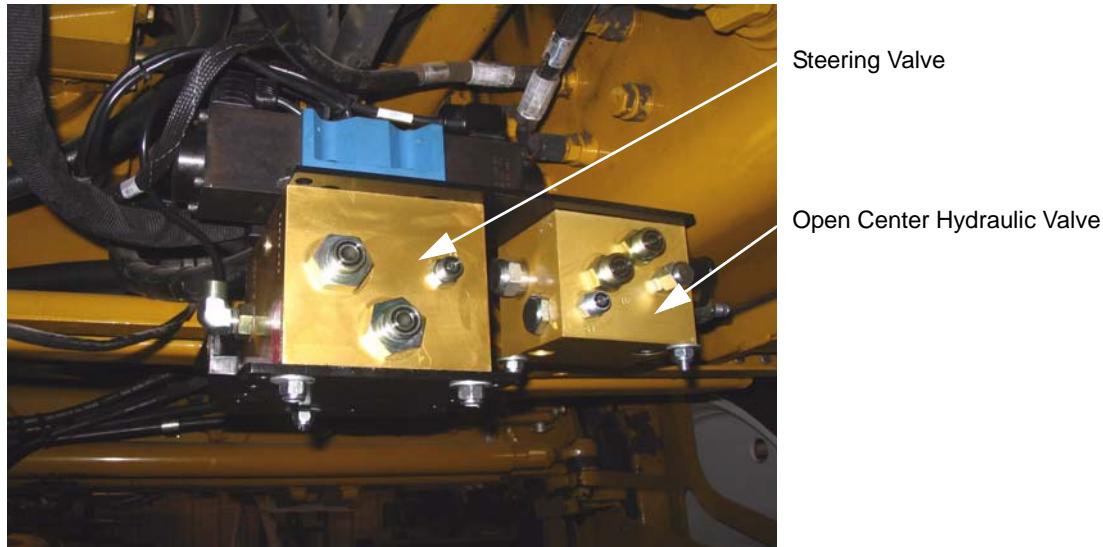


Mounting the Open Center Hydraulic Valve

Note: The bracket for the Open Center Hydraulic Valve can also be installed on the bottom side of the Steering Valve.

2. *Figure 2-10* shows the final installation of the Open Center Hydraulic Valve.

Figure 2-10 View of a Complete Installation



Install the Hydraulic Hoses

The **Install the Hydraulic Hoses** chapter contains information in the following sections:

- *Assemble the Hydraulic Hoses*
- *Hydraulic Hoses and Valves Diagrams*
 - *Hydraulic Hose Diagrams*
 - *Steering Valve Diagram*
 - *Open Center Hydraulic Valve Diagram*
- *Interconnect the Two Valves*
- *Connect the Hoses*
 - *Connect the Tank Hose*
 - *Connect the Pressure Hoses*
 - *Connect the Steer-In Hoses*
 - *Connect the Steer-Out Hoses*
- *Attach the Pressure Transducer*
- *Adjust the Relief Valve*
 - *Functional Test*
 - *Check the Original Steering Relief Valve Setting*
 - *Adjust the AutoSteer Relief Valve*
- *Steering Valve Installation Checklist*

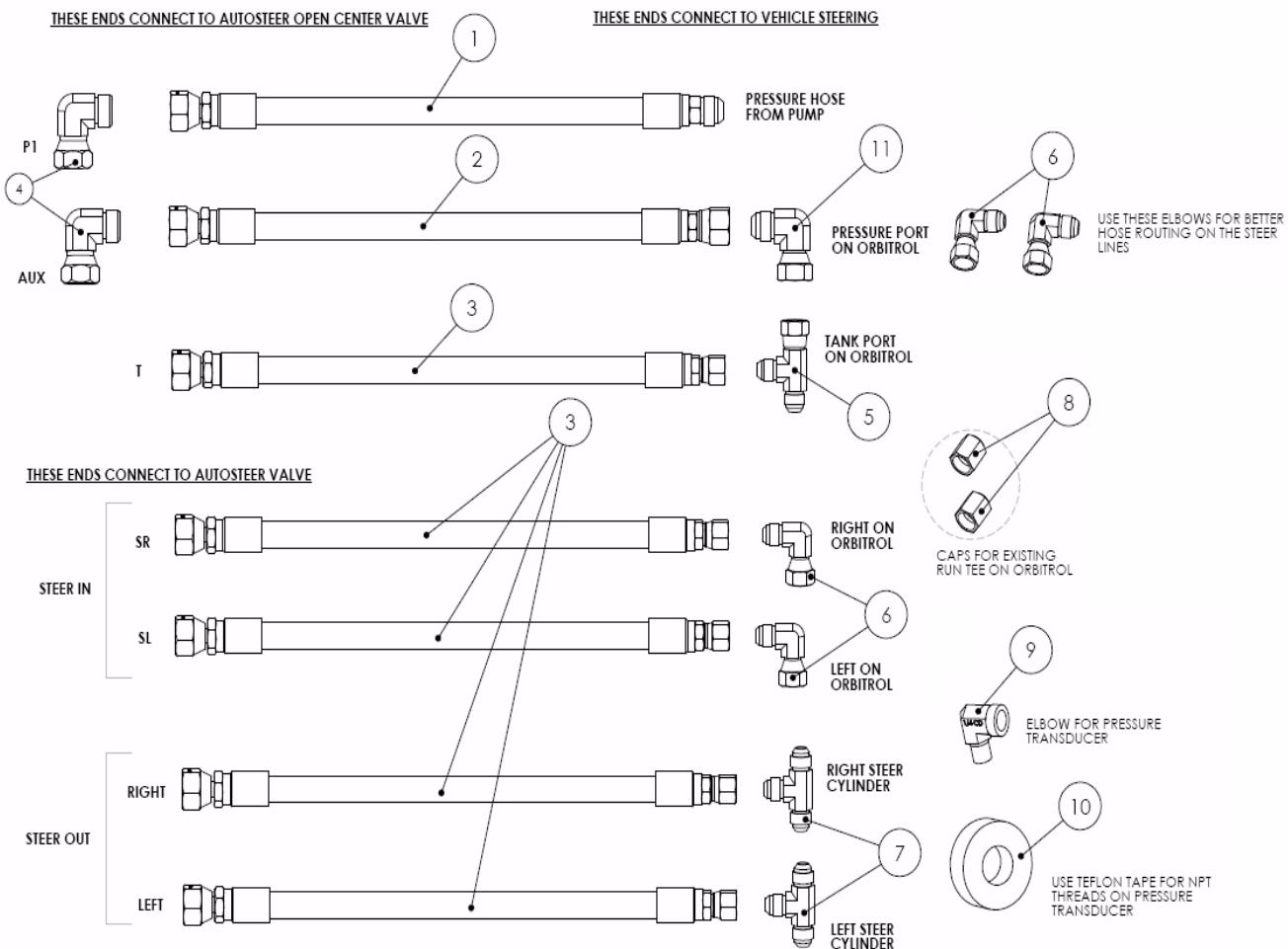
Note: Your vehicle is equipped with an Open Center fixed displacement gear pump and the steering system relief valve is located inside the steering Orbitrol. To avoid possible severe pump damage when the engine is started, the AutoSteer hoses must be installed as described in this manual. Incorrect hose connections, especially inverted Pressure and Tank hoses, can result in immediate pump damage when the engine is started. Do not install the steering system and hoses on your machine if they do not match exactly what is shown in this manual. This installation should only be performed on vehicles listed on the cover of this manual.

Note: The Open Center valve is delivered in a valve kit that includes a generic Open Center hydraulic installation manual. Disregard that manual; only use the instructions provided in this manual which are targeted for your vehicle model.

Assemble the Hydraulic Hoses

Figure 3-1 and Table 3-1 detail how to assemble the hydraulic hoses.

Figure 3-1 Ag-Chem Rogator 854 Hose Kit (PN: 500-0280-01)



Note: Hose length is not shown to scale.

Table 3-1 Ag-Chem Rogator 854 Hose Kit Components (PN: 500-0280-01)

Item	Component	Part Number
1.	Hose Assembly 3/8" x 54", -8F ORFS x -8M JIC	F451TC-JC03080806-54
2.	Hose Assembly 3/8" x 54", -8F ORFS x -8F JIC	F451TC-JC06080806-54
3.	Hose Assembly 3/8" x 54", -8F ORFS x -6F JIC	F451TC-JC06080606-54

Item	Component	Part Number
4.	Nut Elbow Adapter #8, S-LK, F-M	8 C6LO
5.	Run Tee -6 JIC	6 R6X-S
6.	Swivel Nut Elbow Adapter -6 JIC	6 C6X-S
7.	Union Tee -6 JIC	6 JTX-S
8.	Female Cap -6 JIC	6 FNTX-S
9.	F-M 1/4" Street Elbow Adapter	1/4 CD
10.	Teflon Tape, 1/2" x 520"	511-0001-01
11.	Swivel Nut Elbow -6 JIC	8 C6X-S

Hydraulic Hoses and Valves Diagrams

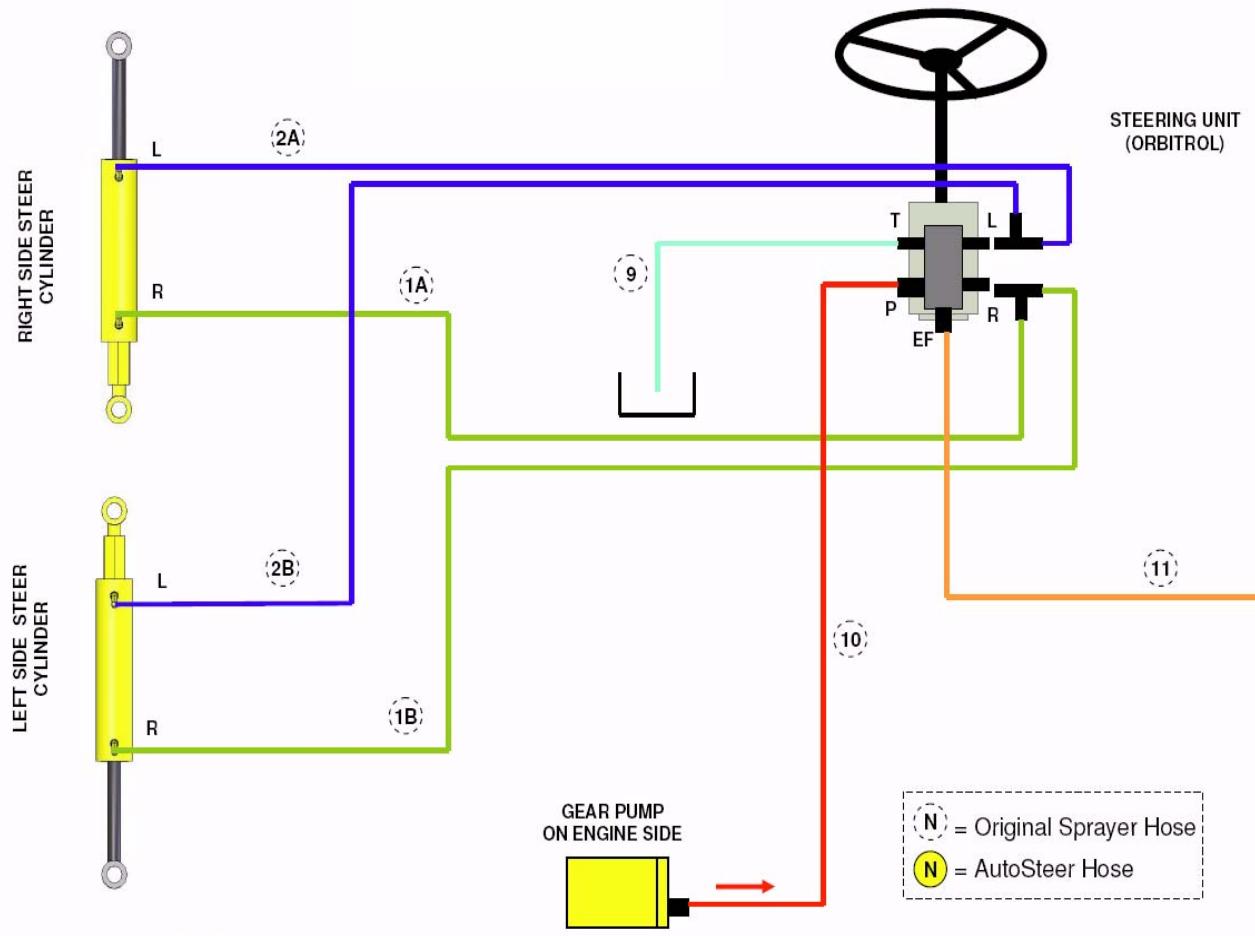
This section contains information in the following sub-sections:

- *Hydraulic Hose Diagrams*
- *Steering Valve Diagram*
- *Open Center Hydraulic Valve Diagram*

Hydraulic Hose Diagrams

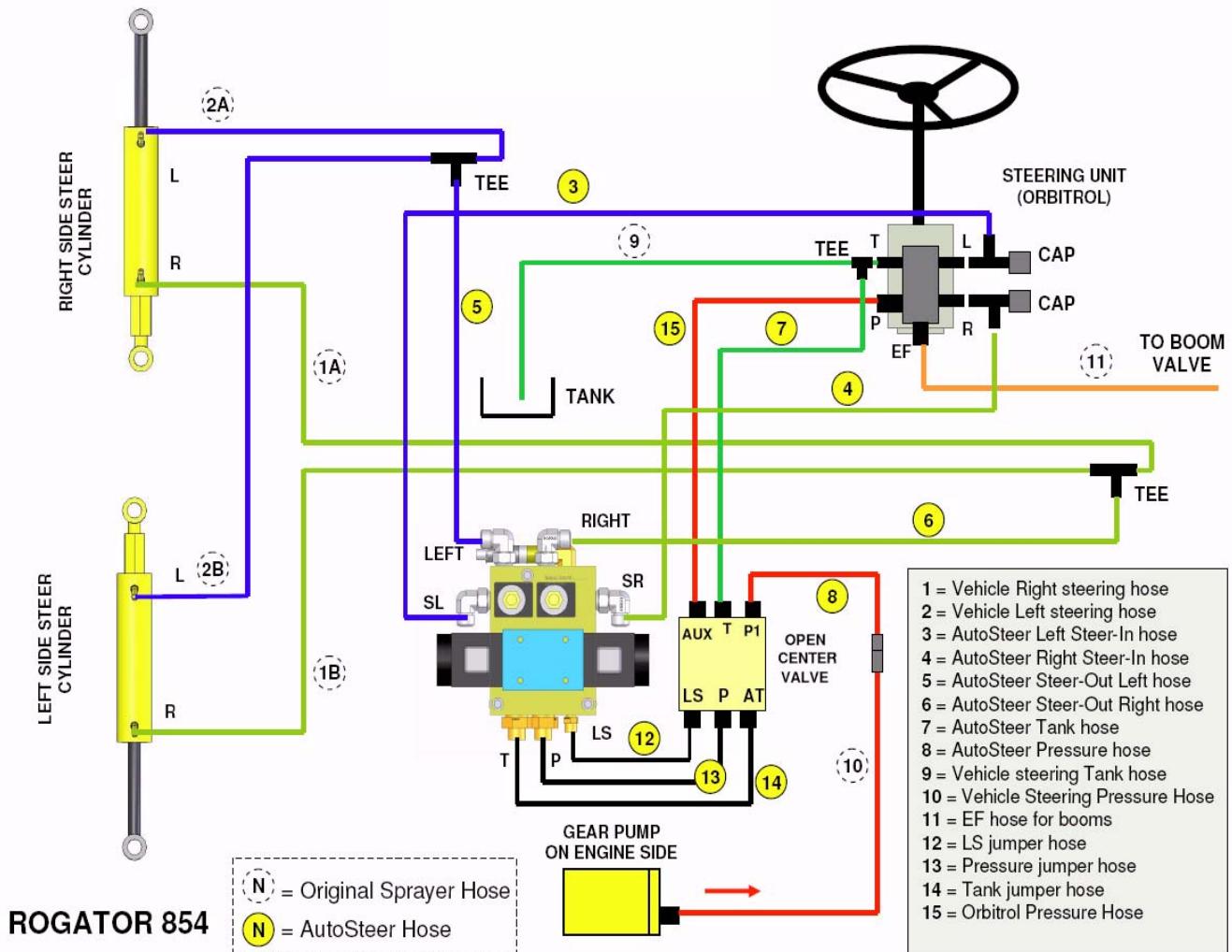
Figure 3-2 and Figure 3-3 show the hydraulic connections before and after installation. You can refer to these diagrams as you are connecting the hydraulic components. The hydraulic hose connection procedures are contained in the *Connect the Hoses* section.

Figure 3-2 Hydraulic Hoses Diagram (Before AutoSteer Installation)



ROGATOR 854

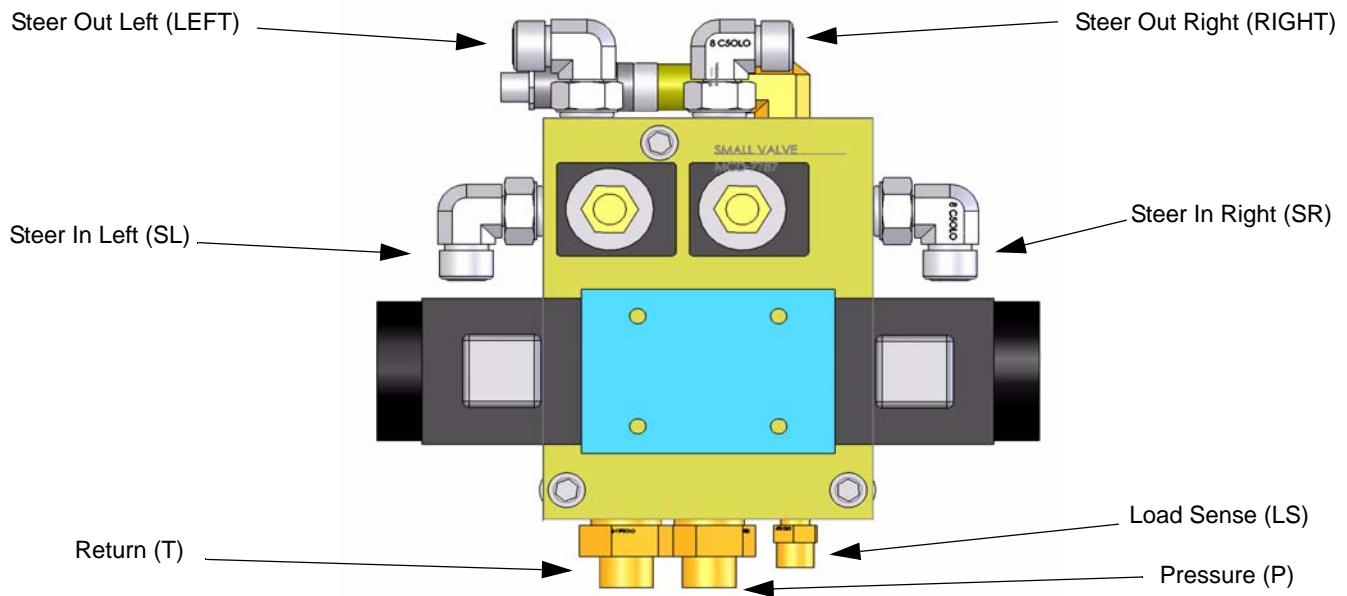
Figure 3-3 Hydraulic Hoses Diagram (After AutoSteer Installation)



Steering Valve Diagram

Figure 3-4 shows the Steering Valve ports.

Figure 3-4 Steering Valve Ports

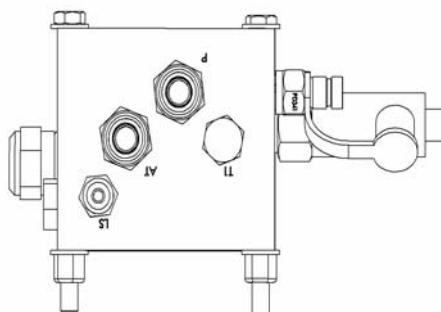


Open Center Hydraulic Valve Diagram

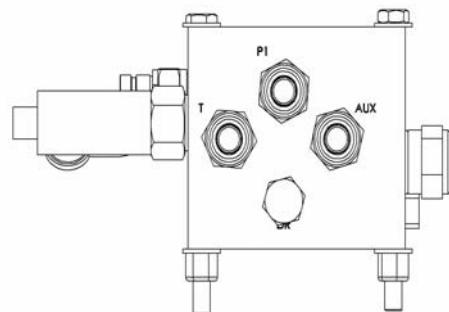
Figure 3-5 shows the Open Center Hydraulic Valve ports.

Note: The Open Center Hydraulic Valve kit contains hydraulic hoses to interconnect the Open Center Hydraulic Valve to the Steering Valve.

Figure 3-5 Open Center Hydraulic Valve Ports



View of the ports that connect to the Steering Valve

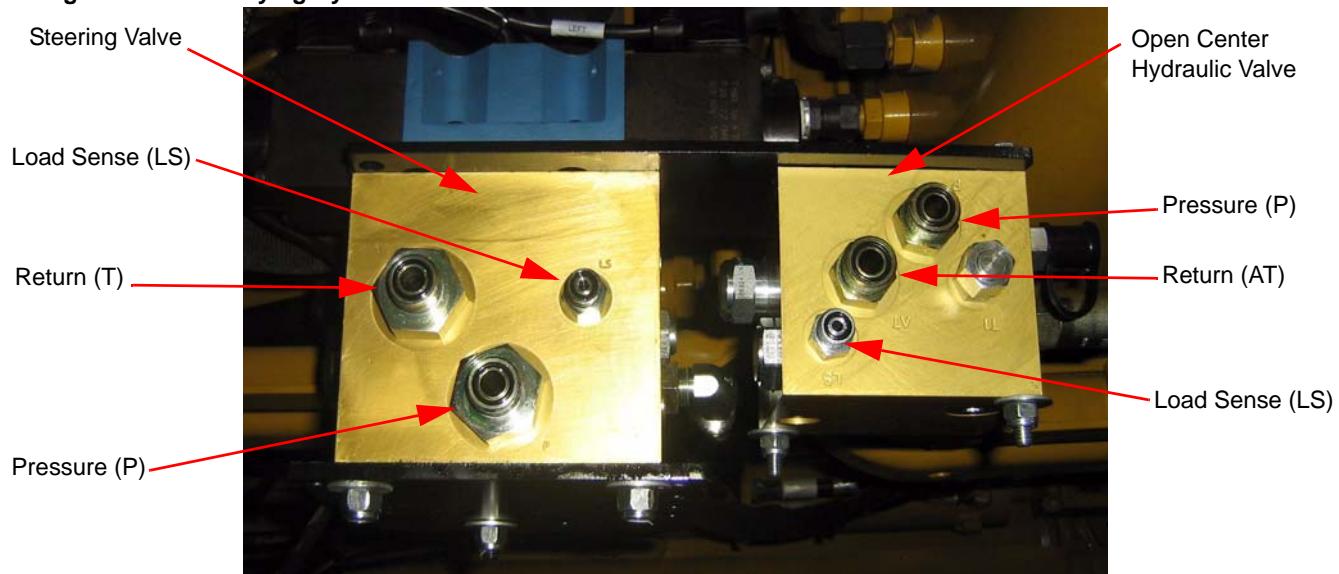


View of the ports that connect to the hoses on the sprayer steering unit (Orbitrol)

Interconnect the Two Valves

- Figure 3-6 details the ports which are used to interconnect the Open Center Hydraulic Valve and the Steering Valve.

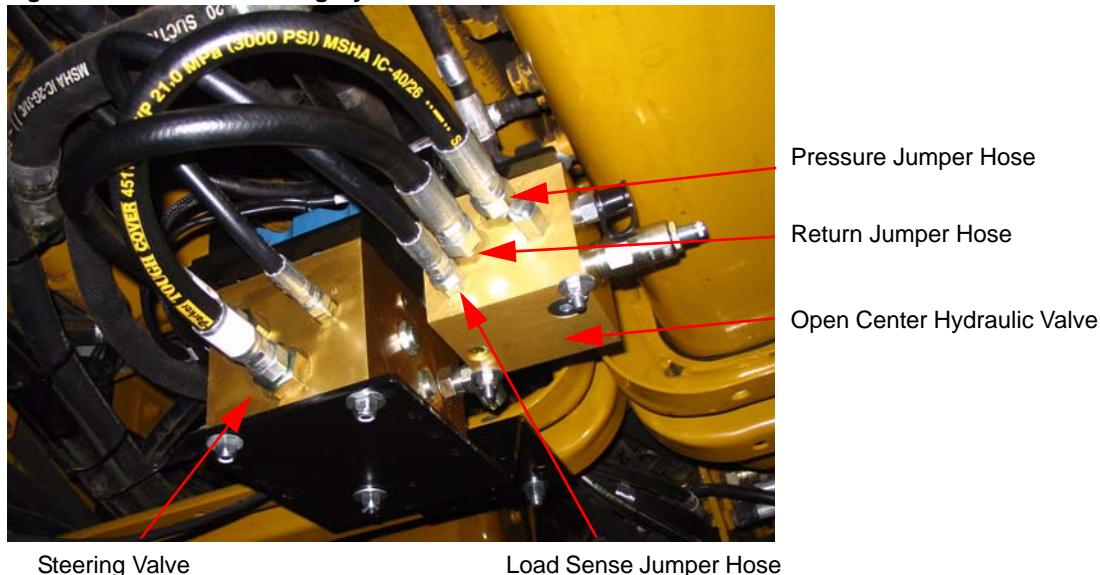
Figure 3-6 Identifying Hydraulic Valve Ports



Connect the Hoses

2. Connect the Pressure jumper hose (1/2" jumper hose provided with your Open Center Hydraulic Valve kit) from the pressure port (labeled 'P') on the Steering Valve to the pressure port (labeled 'P') on the Open Center Hydraulic Valve. See *Figure 3-7*.
3. Connect the Tank jumper hose (1/2" jumper hose provided with your Open Center Hydraulic Valve kit) from the tank port (labeled "T") on the Steering Valve to the return port (labeled "AT") on the Open Center Hydraulic Valve. See *Figure 3-7*.
4. Connect the Load Sense jumper hose (1/4" jumper hose provided with your Open Center Hydraulic Valve kit) from the load sense port (labeled "LS") on the Steering Valve to the load sense port (labeled "LS") on the Open Center Hydraulic Valve. See *Figure 3-7*.

Figure 3-7 Interconnecting Hydraulic Valves



Connect the Hoses

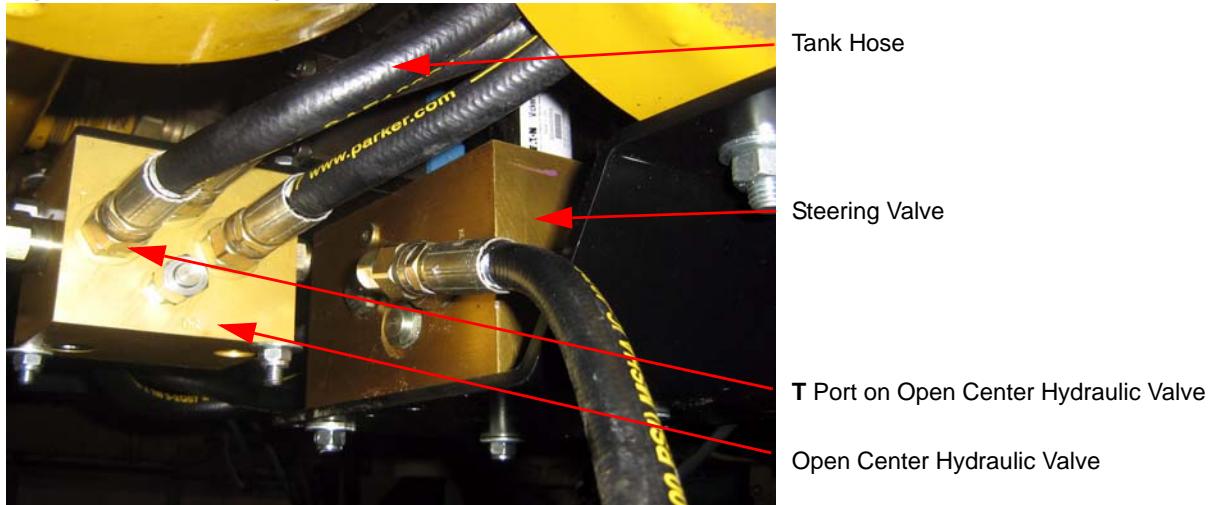
Figure 3-2 and *Figure 3-3* show the hydraulic connections before and after installation. You can refer to these diagrams as you are connecting the hydraulic components. The hydraulic hose connection procedures are contained in the following sub-sections:

- *Connect the Tank Hose*
- *Connect the Pressure Hoses*
- *Connect the Steer-In Hoses*
- *Connect the Steer-Out Hoses*

Connect the Tank Hose

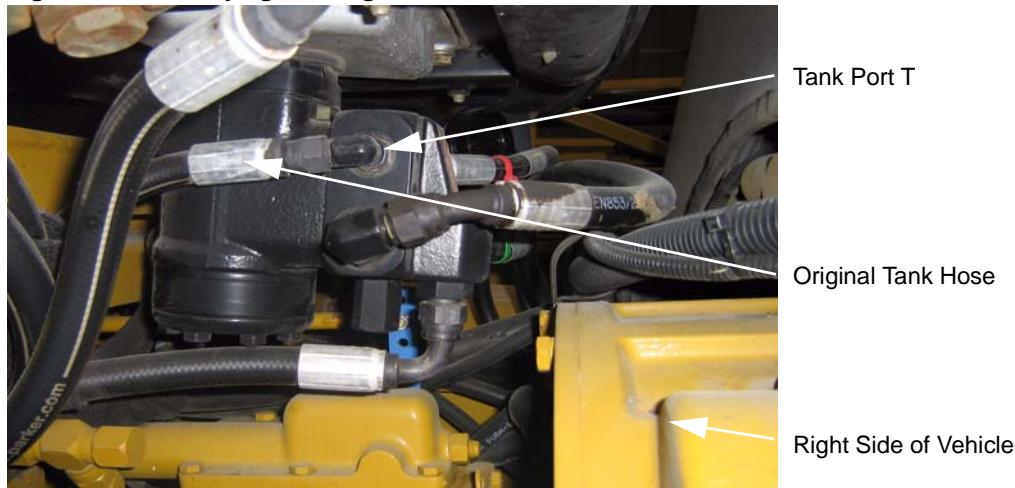
1. Identify the T port on the Open Center Hydraulic Valve. Connect the Tank hose to the T port on the Open Center Hydraulic Valve. See *Figure 3-8*.

Figure 3-8 Connecting Tank Hose to T Port



2. Identify the tank port (T) on the steering Orbitrol under the front of the cab. See *Figure 3-9*.

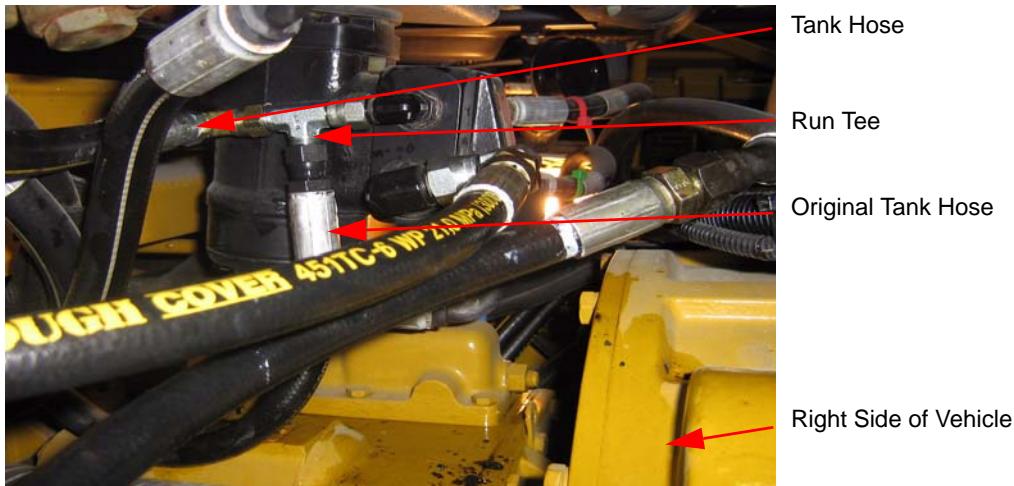
Figure 3-9 Identifying Steering Orbitrol Tank Port



Connect the Hoses

3. Remove the original tank hose (see *Figure 3-9*) from the tank port on the Orbitrol and install a run tee provided with your kit. See *Figure 3-10*.
4. Connect the original tank hose back on the run tee. See *Figure 3-10*.
5. Route the Tank hose from the T port on the Open Center Hydraulic Valve and connect it to the run tee you have installed previously on the steering Orbitrol. See *Figure 3-10*.

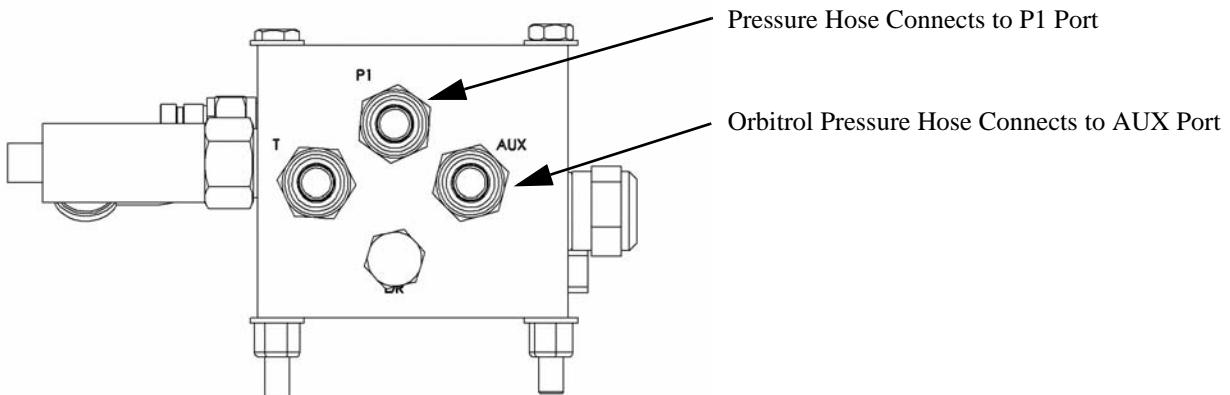
Figure 3-10 Connecting Tank Hose



Connect the Pressure Hoses

1. Two pressure hoses are involved in this installation: Pressure hose and Orbitrol pressure hose. Identify the P1 and AUX ports on the Open Center Hydraulic Valve.
2. Connect the pressure hose (refer to #8 in *Figure 3-3*) to the P1 port on the Open Center Hydraulic Valve. See *Figure 3-11*.
3. Connect the Orbitrol pressure hose (refer to #15 in *Figure 3-3*) to the AUX port on the Open Center Hydraulic Valve. See *Figure 3-11*.

Figure 3-11 Connecting Pressure Hoses to Open Center Hydraulic Valve



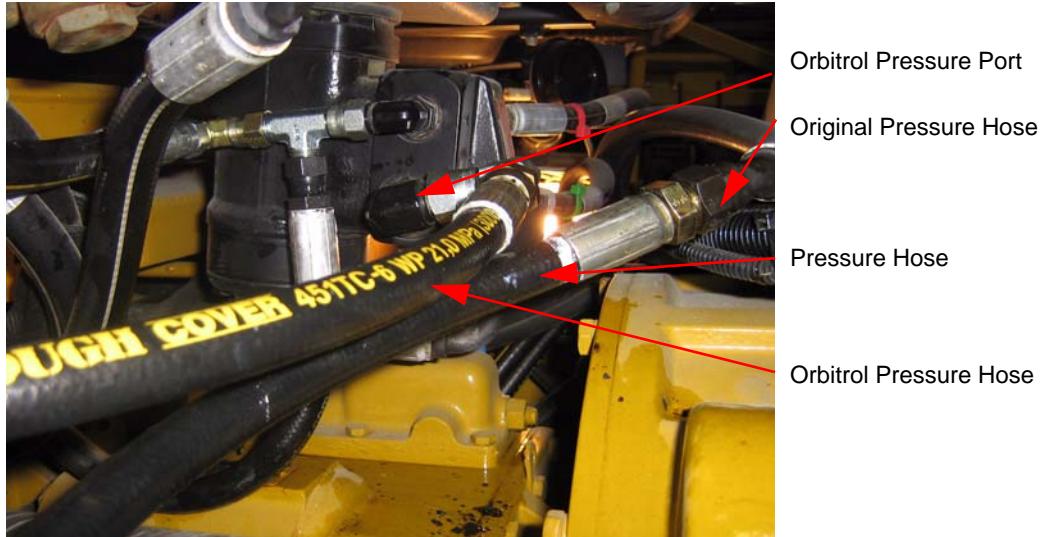
4. Route both hoses to the steering Orbitrol under the front of the cab.
5. Identify the Orbitrol pressure port on the steering Orbitrol under the front of the cab. It is the larger diameter port identified as P. See *Figure 3-12*.

Figure 3-12 Identifying Orbitrol Pressure Port on Steering Orbitrol



6. Disconnect the original pressure hose from the steering Orbitrol and connect it to the Pressure hose from P1. See *Figure 3-13*.
7. Connect the Orbitrol pressure hose from the AUX port to the Orbitrol pressure port. See *Figure 3-13*.

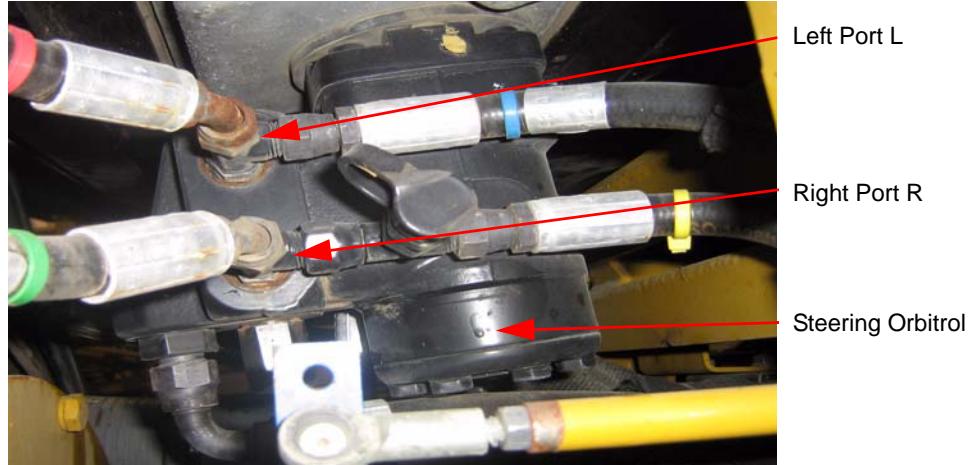
Figure 3-13 Connecting Pressure Hoses to Steering Orbitrol



Connect the Steer-In Hoses

1. Identify the Left and Right ports on the left side of the steering Orbitrol. See *Figure 3-14*.

Figure 3-14 Identifying Left and Right Ports on Steering Orbitrol



2. Disconnect the two vehicle right steering hoses (see #1 in *Figure 3-3*) identified by the green and yellow cable ties from the tee adapter on the Right port on the steering Orbitrol. Leave the tee adapter on the Orbitrol. See *Figure 3-15*.
3. Connect a JIC cap to one side of the tee on the Right port. See *Figure 3-15*.
4. Connect the right steer-in hose (see #4 in *Figure 3-3*) from the SR port on the Steering Valve to the original tee on the Right port on the Orbitrol. See *Figure 3-15*.

Figure 3-15 Connecting Right and Left Steer-In Hoses



5. Disconnect the two vehicle left steering hoses (see #2 in *Figure 3-3*) identified by the red and blue cable ties from the tee adapter on the Left port on the Orbitrol. Leave the tee adapter on the Orbitrol. See *Figure 3-15*.
6. Connect a JIC cap to one side of the tee on the Left port. See *Figure 3-15*.
7. Connect the left steer-in hose (see #3 in *Figure 3-3*) from the SL port on the Steering Valve to the original tee on the Left port on the Orbitrol. See *Figure 3-15*.

Note: The four vehicle steering hoses you disconnected from the Orbitrol will be connected in the next step.

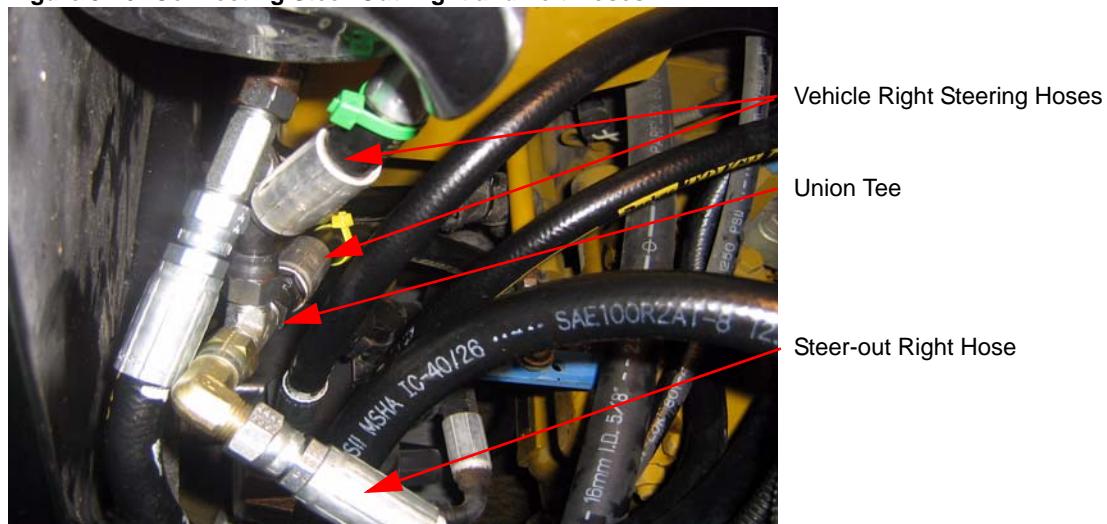
Connect the Steer-Out Hoses

1. Identify the two vehicle left steering hoses that were disconnected from the steering Orbitrol in *Connect the Steer-In Hoses*. See *Figure 3-16*.
2. Connect the two vehicle left steering hoses together near the steering Orbitrol using a union tee and connect the union tee to the steer-out left hose (see #5 in *Figure 3-3*). See *Figure 3-16*.
3. Connect the steer-out left hose to the LEFT port on the Steering Valve (see *Figure 3-4* for details on that port). See *Figure 3-16*.

Note: This will allow the Steering Valve to send oil to the left-steer cylinder.

Note: *Figure 3-16* shows the two vehicle right steering hoses (colored green and yellow) and the steer-out right hose connected together with a union tee.

Figure 3-16 Connecting Steer-Out Right and Left Hoses



Attach the Pressure Transducer

4. Identify the two vehicle right steering hoses that were disconnected from the Orbitrol in *Connect the Steer-In Hoses*. See *Figure 3-16*.
 5. Connect the two vehicle right steering hoses together near the steering Orbitrol using a union tee and connect the union tee to the steer-out right hose (see #6 in *Figure 3-3*). See *Figure 3-16*.
 6. Connect the steer-out right hose to the RIGHT port on the Steering Valve (see *Figure 3-4* details on that port). See *Figure 3-16*.
-

Note: This will allow the Steering Valve to send oil to the right-steer cylinder.

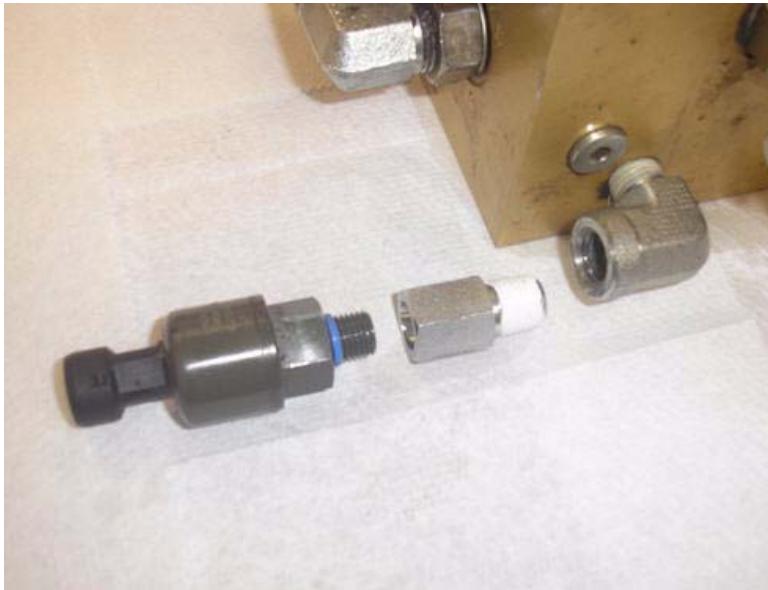
Attach the Pressure Transducer

1. Apply 2-3 turns of Teflon tape to the NPT adapter thread before installing the adapter on the Steering Valve. Thread the Pressure Transducer onto the adapter. The Pressure Transducer does not require Teflon tape because it uses an O-ring seal. See *Figure 3-17*.
-

Note: Use a 1/4" NPT elbow adapter when required to mount the transducer closer to the Steering Valve. Install the Pressure Transducer on the Steering Valve TRANS port. See *Figure 3-17*.

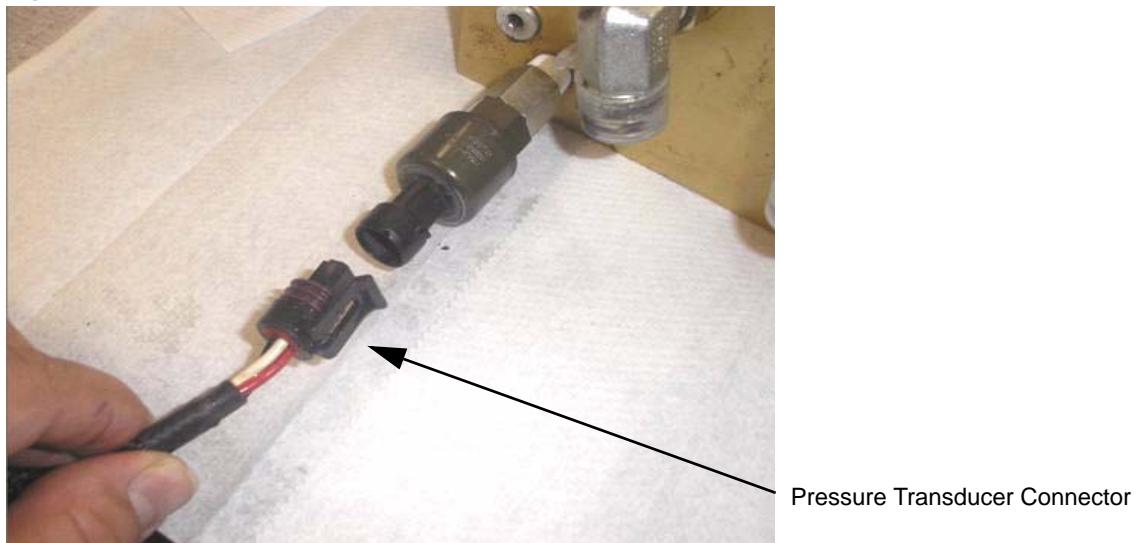
Note: Do not overtighten the Pressure Transducer.

Figure 3-17 Connecting The Pressure Transducer



2. Connect the Steering Valve harness to the Pressure Transducer. Push the connector until the latch locks onto the Pressure Transducer. To remove the cable, lift the tab on the latch and pull the connector. See *Figure 3-18*.

Figure 3-18 Pressure Transducer Installation



3. Connect the Steering Valve 4-pin and 10-pin connectors to the SA Module Harness.

Note: Secure the Pressure Transducer cable and connector with cable ties in a protected position.

Adjust the Relief Valve

This section contains information in the following sub-sections:

- *Functional Test*
- *Check the Original Steering Relief Valve Setting*
- *Adjust the AutoSteer Relief Valve*

Functional Test

1. Install a 5000 psi pressure gauge on the hydraulic pump diagnostic port on the left side of the engine as shown in *Figure 3-19*. Then, use the following steps to perform a functional test.

Figure 3-19 Install 5000 PSI Pressure Gauge on Hydraulic Pump



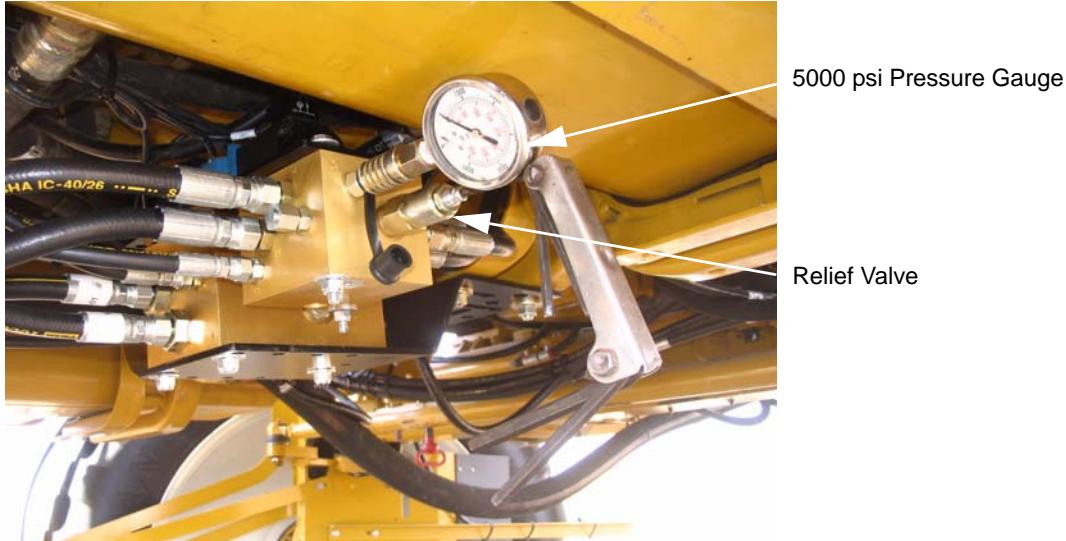
2. Turn the starter motor momentarily to turn the engine without actually starting the engine and observe the pressure reading on the gauge. The pressure should not go above 2000psi when you turn the engine momentarily. If you see a pressure spike above 2000psi, do not start the engine and review all hose connections to determine if they are connected correctly. Correct any wrong hoses before repeating the process of turning the engine.
3. If the pressure appears to be low when you turn the engine momentarily, repeat the process two more times by turning the ignition key momentarily to turn the engine without starting. This will help eliminate air in the hoses.
4. If the pressure reading continues to be low, you may start the engine normally. Turn off the engine immediately if you notice a pressure spike.
5. With the engine running, turn the steering wheel right and left and see if the wheels turn in the correct direction. If the wheels turn in the opposite direction, some steering hoses might be inverted on the AutoSteer valve or the Orbitrol. Check all steering hoses. Check for leaks on all hoses.
6. Immediately check for leaks once the engine has been started.

Check the Original Steering Relief Valve Setting

You must adjust the relief valve on the Open Center Hydraulic Valve before trying to use the AutoSteer system. The relief valve will protect the pump from over-pressure while allowing sufficient pressure for steering the vehicle.

1. Install a 5000 psi pressure gauge on the diagnostic port on the Open Center Hydraulic Valve as shown in *Figure 3-20*. Then, use the following steps to check the original steering relief valve setting.

Figure 3-20 Install 5000 PSI Pressure Gauge on Open Center Hydraulic Valve



2. Loosen the jam nut on the relief valve (see *Figure 3-20*) and insert a hex key in the adjustment screw.
3. With the engine running at idle speed, slowly turn the steering wheel full right or full left until the wheels hit the stops. Continue to turn the steering wheel while observing the pressure on the pressure gauge.
4. Turn the adjustment screw clockwise slowly until you notice that the pressure is no longer increasing as you turn the screw. Write down the maximum pressure observed, which typically is around 2500psi. This is the maximum steering pressure of the machine and is factory set.

Note: The AutoSteer Relief Valve located in the Open Center Hydraulic Valve is set at the factory to approximately 1900psi; it must be adjusted to match the vehicle steering pressure before using the AutoSteer system.

Adjust the AutoSteer Relief Valve

The AutoSteer Relief Valve must be adjusted so that it opens at a pressure slightly higher than the original maximum steering pressure. The AutoSteer system must be fully installed and working before you can make final adjustments to the Relief Valve.

1. Install a 5000 psi pressure gauge on the valve diagnostics coupler labeled as “GP.” Use a short extension hose on the pressure gauge if necessary for easier reading.
2. Put transmission into “neutral” or “park” position and turn on the hand brake.
3. Start the engine and leave it at low idle.
4. Immediately check for oil leaks on all hose connections that were opened.

5. Turn the steering wheel full right and then full left and check for correct manuals steering response. Immediately check for oil leaks on all hose connections that were opened. Air in the hoses may cause a slight steering delay when the AutoSteer system is first powered up.
6. Observe the standby pump pressure shown on your pressure gauge. Standby pressure should be very low or around 350 psi. If standby pump pressure is zero or less than 100 psi, you might have inverted the Pressure and Tank hoses.
7. Clear any bystanders from around the sprayer because you will be moving the front wheels in the next step.
8. Press the 100% right or left button in the **Hydraulic Valve** window from the **Steering Components** window. The front wheels will turn quickly towards the stops. Maximum pump pressure will be indicated on the pressure gauge when the wheels hit the stops.
9. Adjust the Relief Valve so the maximum pump pressure is 2600 psi when the wheels hit the stops.
10. Tighten the jam nut on the Relief Valve once the correct pressure setting has been adjusted.
11. Remove your pressure gauge by sliding the sleeve on the quick coupler.

Note: The objective of the Relief Valve adjustment is to establish a maximum AutoSteer pressure that is slightly higher than the maximum pressure obtained while steering the vehicle manually.

Steering Valve Installation Checklist

1. Valve bracket bolts are tight.
2. Valve mounting screws are tight.
3. Pressure hoses connected to correct ports at both ends.
4. Tank hoses connected to correct ports at both ends.
5. LS hose connected to correct ports at both ends.
6. Right Steer-In hose connected to correct ports.
7. Left Steer-In hose connected to correct ports.
8. Right Steer-Out hose connected to correct ports at both ends.
9. Left Steer-Out hose connected to correct ports at both ends.
10. Pressure Transducer installed and tight.
11. Hose fittings are tight.
12. Hoses are routed in a protected position and secured with cable ties.
13. Relief Valve adjusted.

Wheel Angle Sensor (WAS) Installation

This **Wheel Angle Sensor Installation** chapter information is provided in the following sections:

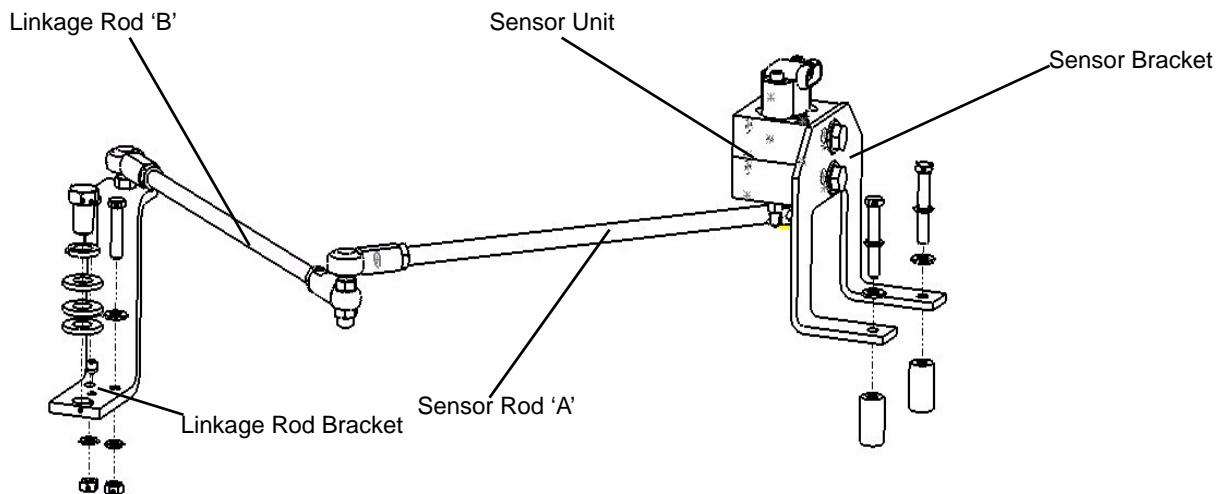
- *Installing Mounting Brackets*
 - *Front Axle Type 1*
 - *Front Axle Type 2*
- *Cut the Wheel Angle Sensor Rods to Length*
- *Assemble the Linkage Rod Hardware*
- *Attach the Wheel Angle Sensor Rods to Brackets and Adjust*

Note: The Wheel Angle Sensor is optional equipment and is not provided with the installation kit. The Wheel Angle Sensor installation instructions are provided for special installations, when required.

This **Wheel Angle Sensor** chapter provides the information necessary to install the Wheel Angle Sensor components.

Figure 4-1 shows the Wheel Angle Sensor assembly fully assembled.

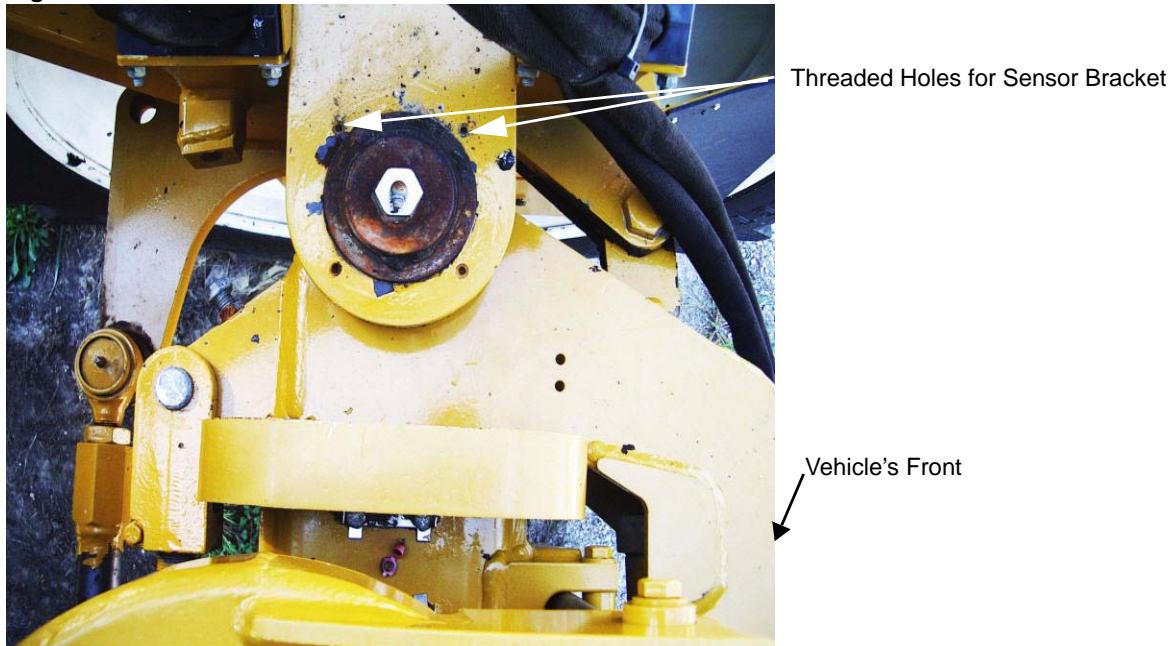
Figure 4-1 Wheel Angle Sensor



Installing Mounting Brackets

1. The Wheel Angle Sensor mounts on the vehicle's left front axle. The Ag-Chem Rogator 854 sprayer front axle has two blind threaded holes for installing the sensor bracket. See *Figure 4-2*.

Figure 4-2 Vehicle's Left Front Axle



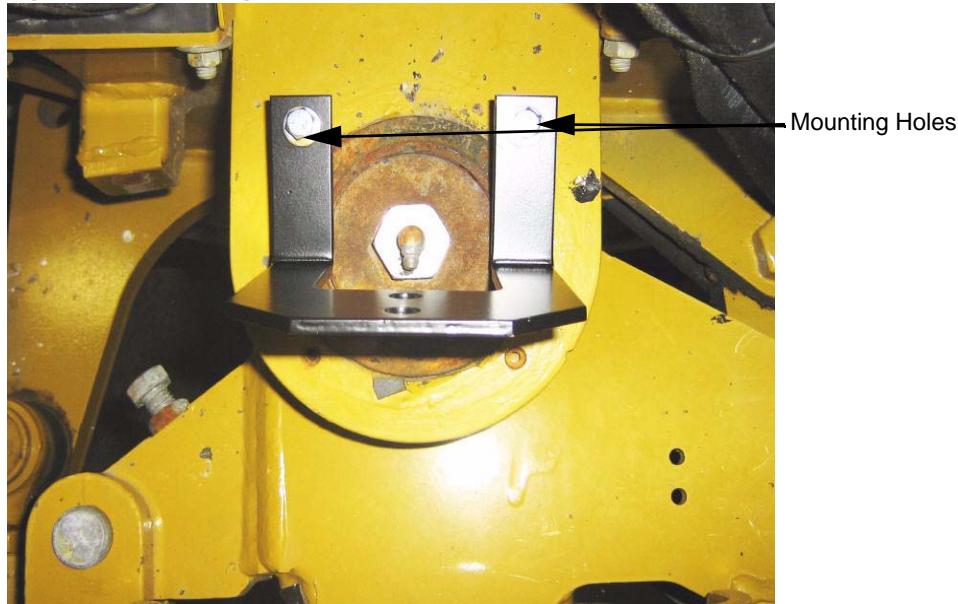
2. Before installing the sensor bracket, use a 1/4-20 tap to clean out the blind threaded holes near the kingpin. See *Figure 4-3*.

Figure 4-3 Cleaning the Blind Threaded Holes



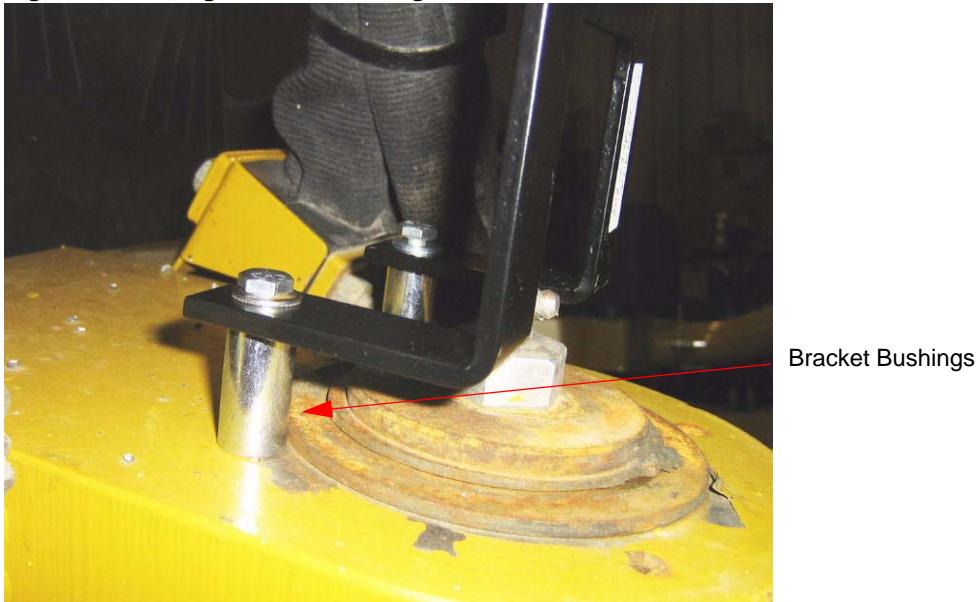
3. Align the sensor bracket holes to the threaded holes and fasten the sensor bracket to the front axle using the two steel bushings and longer bolts provided with your kit. See *Figure 4-4*.

Figure 4-4 Installing the Sensor Bracket



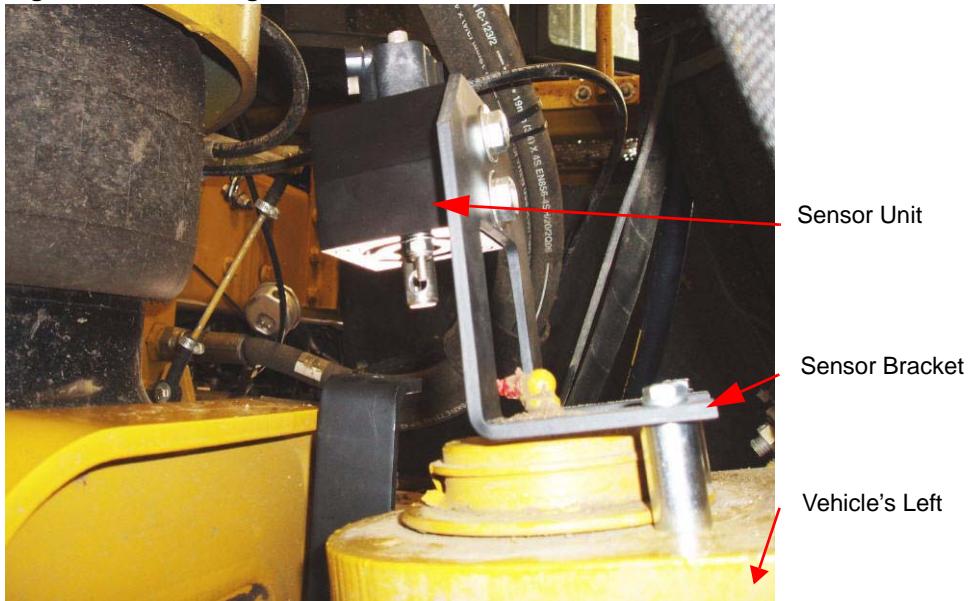
4. *Figure 4-5* shows how the steel bushings are being used to elevate the sensor bracket over the front axle kingpin.

Figure 4-5 Using the Steel Bushings



5. Mount the Sensor Unit to the sensor bracket as shown in *Figure 4-6*.

Figure 4-6 Mounting the Sensor Unit



6. There are two front axle types on the Ag-Chem Rogator 854 sprayer. Depending on the front axle type you encounter, there are two different ways for installing the Linkage Rod Bracket.
 - *Front Axle Type 1* on page 37
 - *Front Axle Type 2* on page 39

Front Axle Type 1

1. The first front axle type has a single 1/2" tapped hole directly inboard of the kingpin as shown in *Figure 4-7*.

Figure 4-7 Front Axle with 1/2" Tapped Hole (Type 1)



2. Install the Type 1 Linkage Rod Bracket as shown in *Figure 4-8*.

Note: To prevent the Linkage Rod Bracket from rotating, drill a small recess into the axle under the set screw provided in the Linkage Rod Bracket.

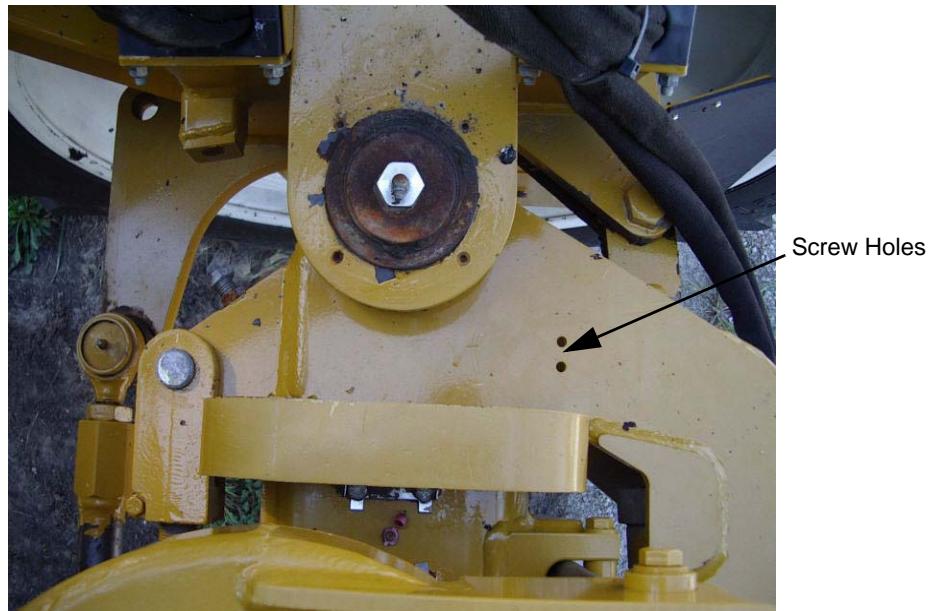
Figure 4-8 Mounting the Linkage Rod Bracket on Front Axle (Type 1)



Front Axle Type 2

1. The second front axle type has a pair of small holes slightly forward of the kingpin as shown in *Figure 4-9*.

Figure 4-9 Front Axle with a Pair of Small Holes (Type 2)



2. Use the two bolts provided with your installation kit to install the Type 2 Linkage Rod Bracket as shown in *Figure 4-10*.

Figure 4-10 Mounting the Linkage Rod Bracket on Front Axle (Type 2)



Cut the Wheel Angle Sensor Rods to Length

The Wheel Angle Sensor rods are shipped longer than they need to be. These rods must be cut to the proper length to allow the linkage rods to provide the Wheel Angle Sensor the maximum number of counts as the steering wheel is turned from full right to full left. Due to the variability of the possible mounting positions and axle options, it is left to the installer to verify the correct length for each individual installation and to cut the rods to length.

Table 4-1 provides the typical rod lengths that work for most installations. Before cutting the linkage rods to these measurements, verify that the Wheel Angle Sensor brackets can attach to the vehicle as shown in this manual and that they are attached the correct distance from any reference points shown. If the axle does not allow the Wheel Angle Sensor brackets to be installed as shown, do not cut the rods until it is determined what the proper lengths are for your installation. Due to possible variations in the mounting positions, these measurements could be different. These measurements are provided as a reference only. The installer is responsible for verifying that the provided measurements will work prior to cutting the rods.

Use a metal hack saw and vice, as shown in *Figure 4-12*, to cut the Wheel Angle Sensor linkage rods to the proper lengths.

Note: It is advisable to attach a nut on the side of the metal rod that is going to be kept in order to clean the threads after the cut has been made.

Note: Clean-up the ends of the threaded rods using a file and check if the threads are good using a steel nut: the nut should engage smoothly on the threaded rod.

Protect the threads from damage while cutting the rods. *Figure 4-11* shows where the measurements provided in *Table 4-1* are measured from.

Figure 4-11 Linkage Rod Cut Length Measurement Points

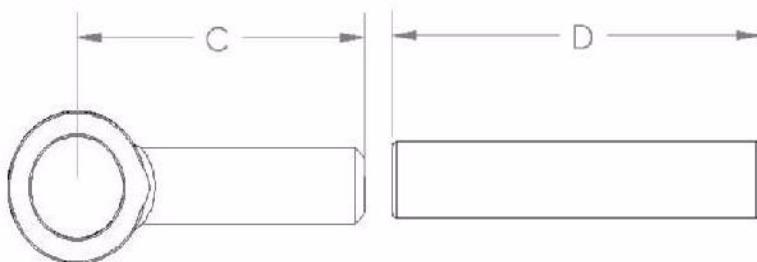


Table 4-1 Linkage Rod Cut Lengths

Item	Length
Rod C	1.5 inches (38mm) ^a
Rod D	2.0 inches (51mm) ^a

a. This measurement is the linkage rod length prior to assembly with the ball joints.

Figure 4-12 Linkage Rod Cutting

Note: The “after-assembly” center-to-center lengths of each linkage rod are shown in *Table 4-2*. *Figure 4-13* shows the measurement points for the assembled linkage rods.

Assemble the Linkage Rod Hardware

For most installations, use *Table 4-2* to adjust the lengths of the rod assemblies to the values shown. *Figure 4-13* shows where the measurement points for each rod are taken. Due to the variation of axle types and installation points, these measurements are provided as a reference only. Before connecting the steering rods and turning the steering axle verify that these lengths will work and the sensor will not be damaged.

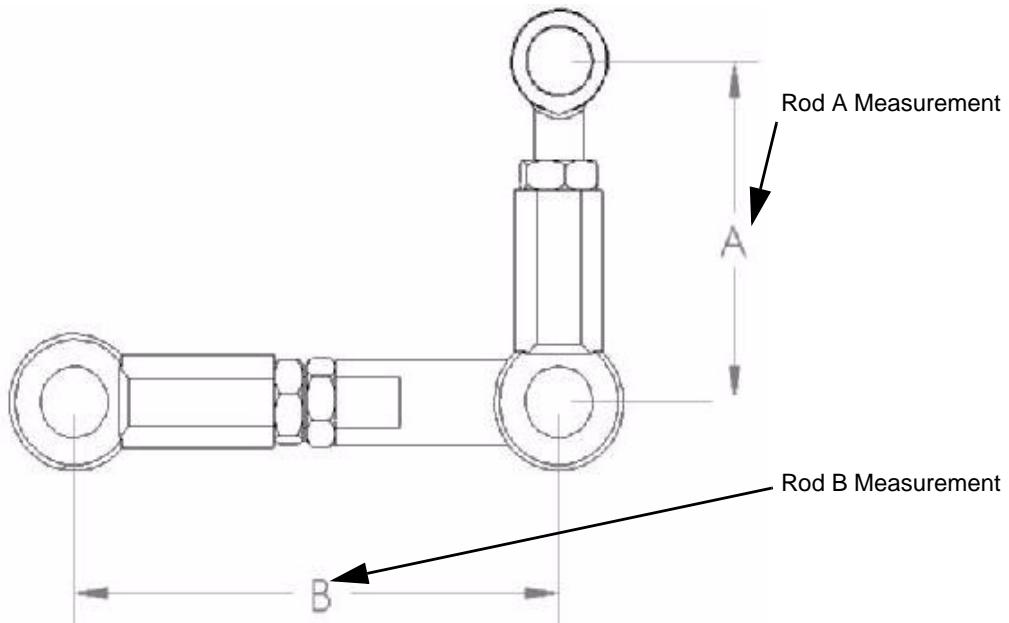
Assemble the Linkage Rod Hardware

Table 4-2 Assembled Linkage Rod Length

Item	Length
Rod A	2.5 inches (64 mm) ^a
Rod B	3.75 inches (95 mm) ^a

a. This measurement is the linkage rod length after assembly with the ball joints.

Figure 4-13 Linkage Rod Measurement Points (Assembled)



Note: The threaded rods must be cut to the correct lengths before final assembly.

Attach the Wheel Angle Sensor Rods to Brackets and Adjust

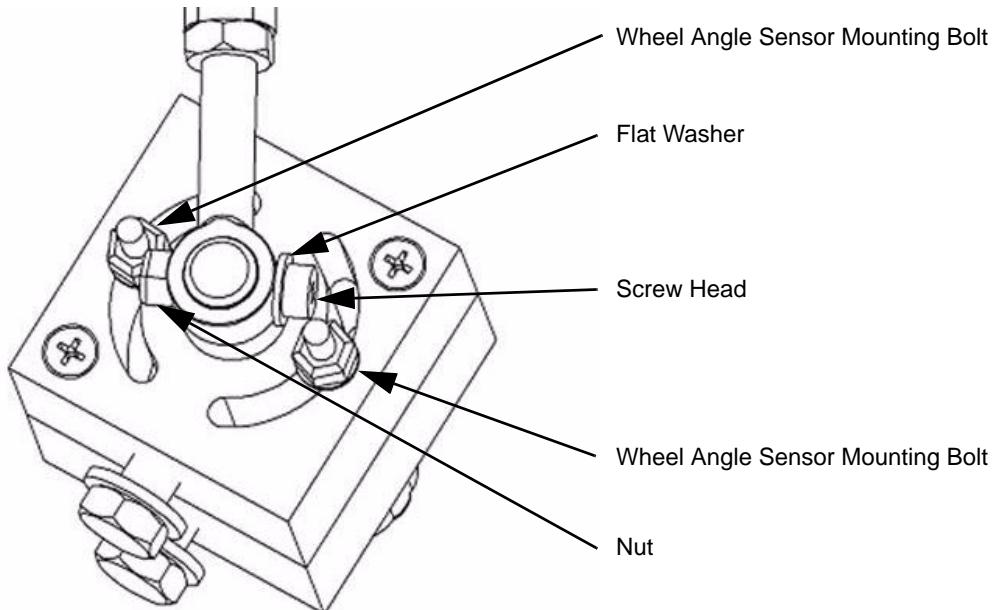
1. Install Linkage Rod A on the Wheel Angle Sensor shaft. See *Figure 4-14*.
2. Install Linkage Rod B on the sensor bracket using a ball joint. See *Figure 4-14*.

Figure 4-14 Connecting the Linkage Arms



3. Ensure a flat washer is placed under the screw head when attaching the linkage rod to the sensor shaft. See *Figure 4-15*.

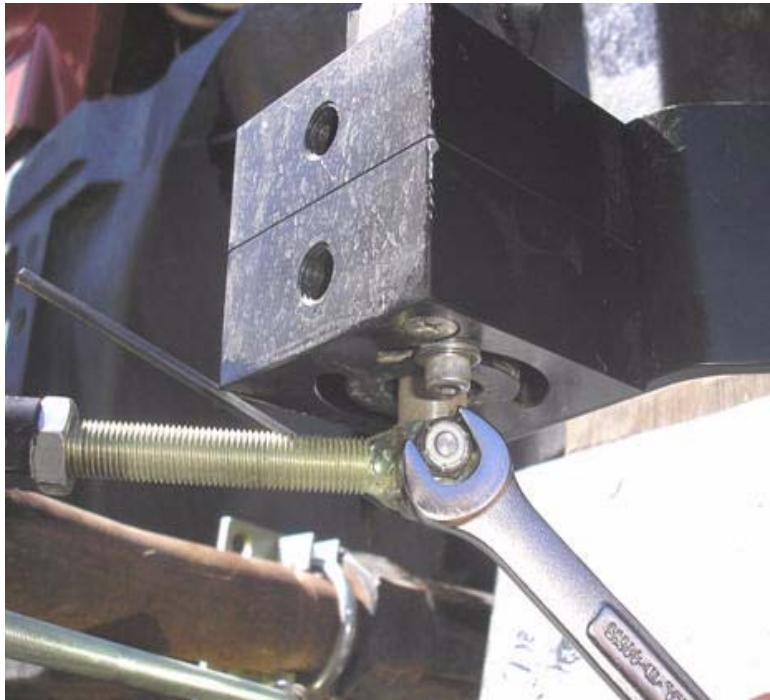
Figure 4-15 Washer on Shaft Screw



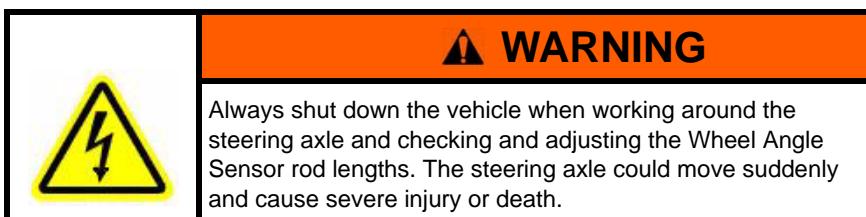
Note: The washer should be on the screw head side and not the nut side of the assembly.

4. Tighten the screw on the sensor shaft. Use a 1/8" hex key and a 3/8" wrench. See *Figure 4-16*.

Figure 4-16 Wheel Angle Sensor Shaft Tightening (different vehicle shown)



5. Tighten all jam nuts on the threaded rods.

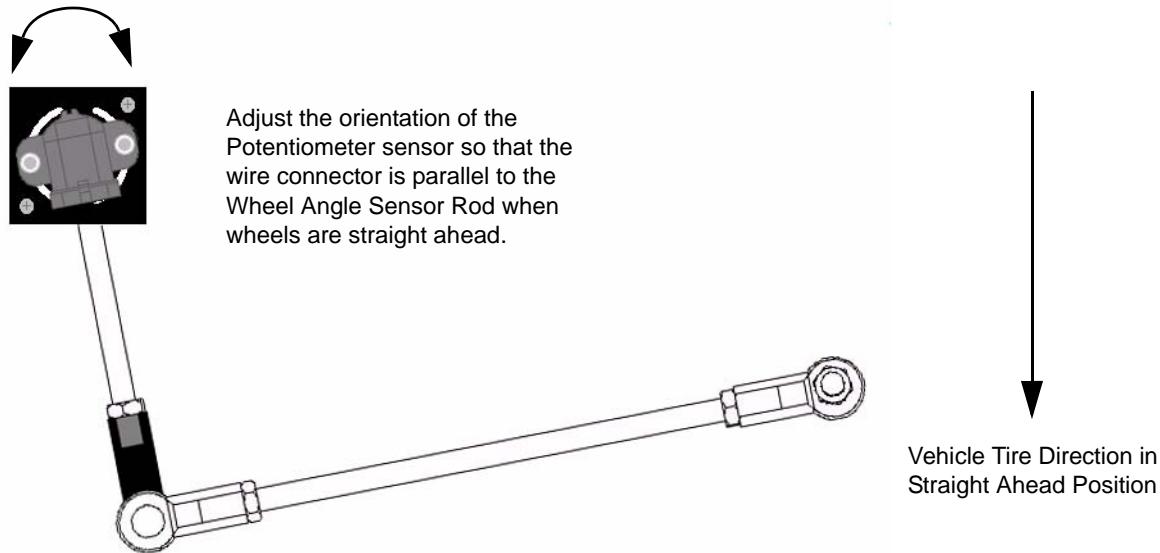


Note: Never attach the linkage rods to Wheel Angle Sensor rod and turn the steering wheels manually or automatically until the fit has been verified. The linkage rods must remain apart while the steering wheels are turned to the maximum right and left positions and then temporarily attached at these positions. Failure to do this may cause the Wheel Angle Sensor or vehicle to become damaged.

Note: After the linkage rods are assembled in the following steps, they should move freely without touching any other parts and without overextending. Make any necessary adjustments to the linkage rods if there is an interference problem.

6. With the linkage rods disconnected, manually turn the steering wheel so that the wheels are centered (the vehicle will travel straight ahead when moving).
7. Temporarily attach the linkage rods.
8. Rotate the Wheel Angle Sensor potentiometer on top of the mounting block so that the plastic wire connector is parallel to the Wheel Angle Sensor rod. See *Figure 4-17*.

Figure 4-17 Adjust Potentiometer Angle to Match Straight Ahead

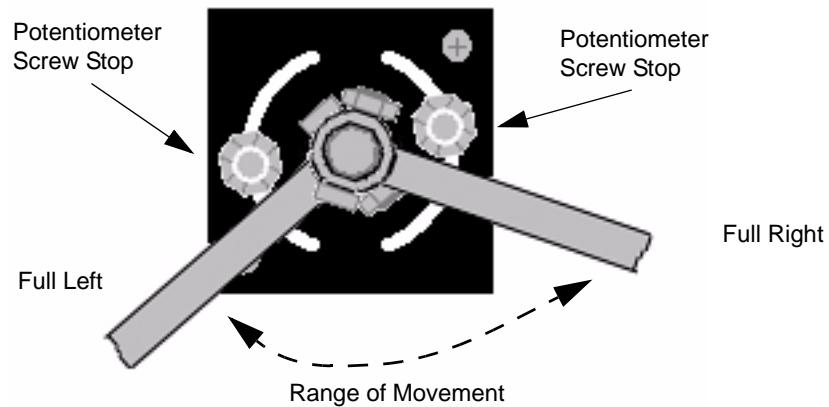


9. After the potentiometer has been adjusted, tighten the potentiometer bolts with a 5/32" hex key and a 3/8" wrench. See *Figure 4-18*.

Figure 4-18 Wheel Angle Sensor Potentiometer (different vehicle shown)



10. Disconnect the linkage rods and turn the steering wheel manually to the full left position.
11. Reattach the linkage assembly and verify that the sensor or rods will not be damaged. Adjust the rod lengths as necessary.
12. Disconnect the linkage rods and turn the steering wheel manually to the full right position.
13. Reattach the linkage assembly and verify that the sensor will not be damaged. Adjust the rod lengths as necessary.
14. Repeat *Step 6* through *Step 13* until the rod lengths have been adjusted and the potentiometer is centered to get the maximum sensor movement. The maximum movement is reached when the Wheel Angle Sensor rod will sweep from approximately 3/16 inch (5mm) from both bolt heads holding the potentiometer on to the block when the wheels are turned to the maximum right and left positions. See *Figure 4-19*.

Figure 4-19 Maximum Sensor Movement**Wheel Angle Sensor as Seen from the Bottom**

Note: An Ohm meter can also be used to determine if there is enough sensor movement. Connect the Ohm meter to pins A and B of the Wheel Angle Sensor. Measure the Ohm reading at the maximum left and right position. After subtracting the smaller number from the larger number, there should be at least a 3.75 kilohms change. The reading should also never go below 1.6 or higher than 6.6 kilohms as this is reaching the limits of the potentiometer and could damage the sensor.

Assemble the Linkage Rod Hardware

15. Once all the adjustments are complete, tighten all lock nuts and bolts on the linkage and Wheel Angle Sensor rod. A 1/2" and two 9/16" wrenches are required to tighten all the connections.
16. Tighten the bolt securing the two linkage rods together. See *Figure 4-20*.

Figure 4-20 Linkage Rod Ball Joint Bolt (different vehicle shown)



17. *Figure 4-14* shows the completed Wheel Angle Sensor installation.

SA Module Installation

The **SA Module Installation** chapter contains information in the following sections:

- *SA Module Mounting Orientation*
- *Mount the SA Module*

SA Module Mounting Orientation

The SA Module can also only be mounted in certain orientations. *Figure 5-1* shows the correct mounting positions and *Figure 5-2* shows incorrect mounting positions.

Figure 5-1 Correct SA Module Mounting Orientations

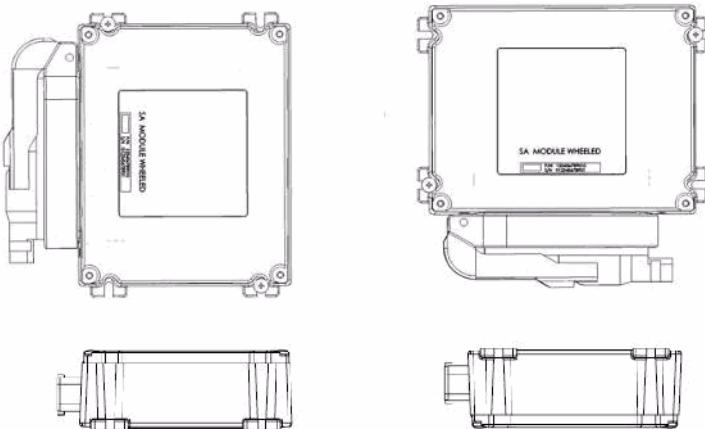
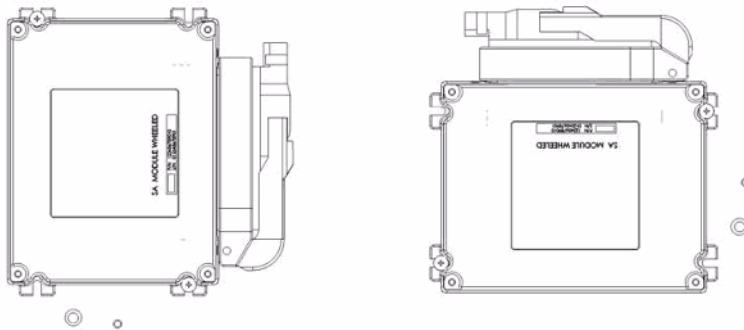


Figure 5-2 Incorrect SA Module Mounting Orientations



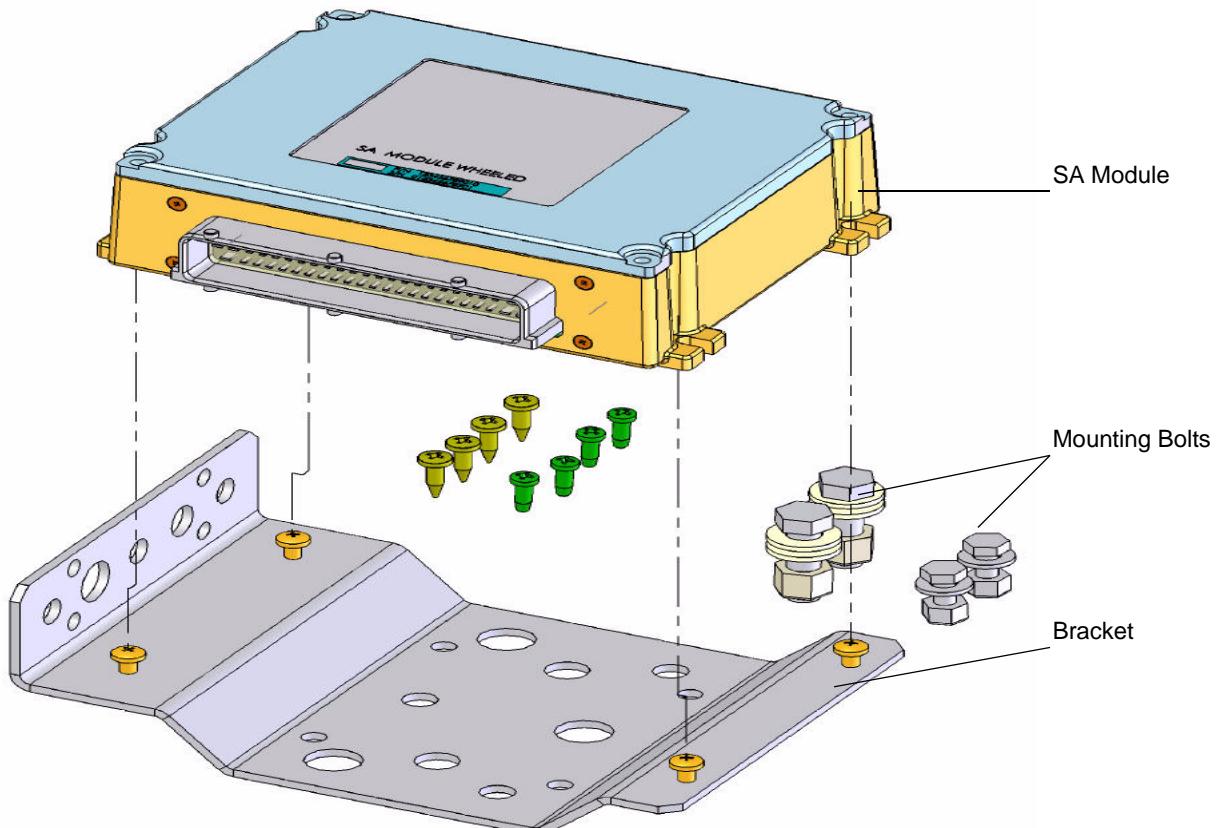
Mount the SA Module

Due to the variety of options available on vehicles and the possible configuration differences, it may be necessary to install the SA Module in location other than the example shown here. If an alternative location is required, choose a location where the SA Module can be protected from damage from moving parts or crop debris and excessive moisture from weather and cleaning equipment.

Note: The SA Module Harness must be routed in a protected position to avoid damage from the moving parts.

1. Mount the SA Module Bracket in a protected position under the frame. Secure the Bracket using existing bolts on the sprayer or the bolts and screws provided in the installation kit. See *Figure 5-3* and *Figure 5-4*.

Figure 5-3 SA Module and SA Module Bracket Overview



2. A complete SA Module installation is shown in *Figure 5-4*.

Figure 5-4 Complete SA Module Installation



Mount the SA Module

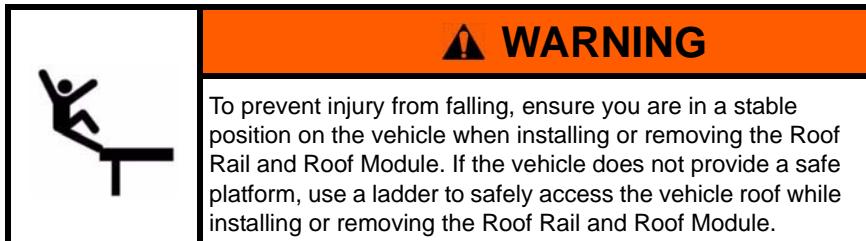
Roof Module Installation

This **Roof Module Installation** chapter contains information in the following sections:

- *Safety Notes*
- *Installation Procedure*

Safety Notes

- The AutoSteer system must be powered OFF when installing or removing the Roof Module.
- The Roof Module must always be firmly secured to the Roof Rail using the hardware whenever the vehicle is in operation to prevent the Roof Module from releasing from its bracket and falling.
- The Roof Module must be removed when transporting the vehicle at speeds above 30 mph (50 km/h).
- Ensure you are in a stable position on the sprayer platform when removing the Roof Module, so that you do not fall or drop the Roof Module.
- Use a ladder to install the AutoSteer Roof Rail and Roof Module.



To prevent injury from falling, ensure you are in a stable position on the vehicle when installing or removing the Roof Rail and Roof Module. If the vehicle does not provide a safe platform, use a ladder to safely access the vehicle roof while installing or removing the Roof Rail and Roof Module.

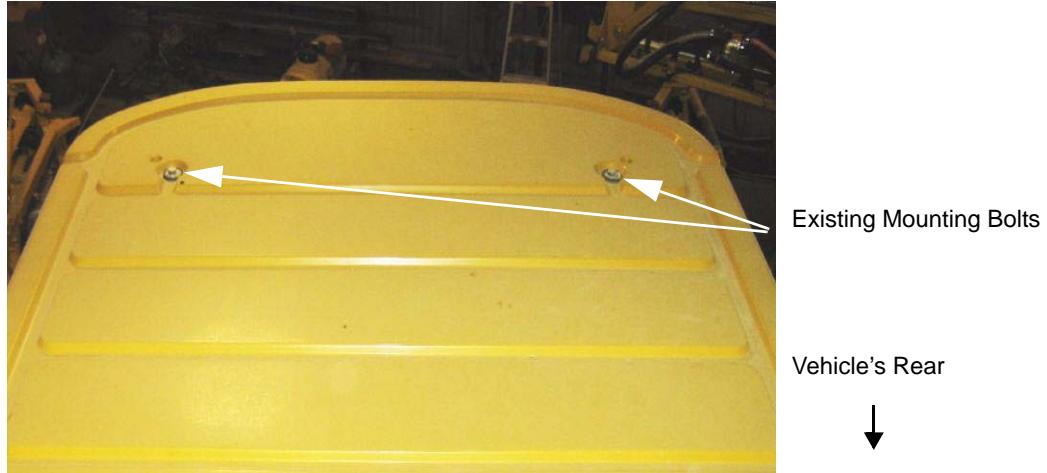
Installation Procedure

1. Place the ladder as close as possible to the side of the cab.

Note: A ladder is necessary to install the Roof Rail and Roof Module.

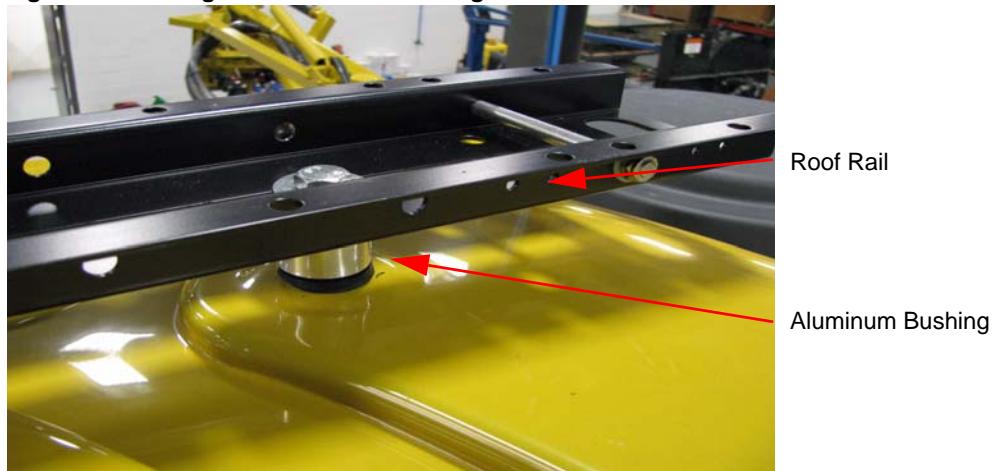
2. The Ag-Chem Rogator 854 sprayers have two large bolts located on the front of the roof. To install the Roof Rail, use a 3/4" wrench to remove the two cab roof bolts located at the front as shown in *Figure 6-1*.

Figure 6-1 Cab Roof Existing Mounting Bolts



3. Center and align the Roof Rail holes to the cab roof mounting holes and fasten the Roof Rail to the roof using the two aluminum bushings and longer bolts provided with your kit. For a lower installation, you can use a stack of flat washers as spacers so the Roof Rail does not touch the roof. The holes and the Locking Pin must be on the left side of the vehicle.
4. *Figure 6-2* shows how the aluminum bushings are being used to elevate the Roof Rail over the cab roof.

Figure 6-2 Using the Aluminum Bushings



Note: The Roof Rail should be mounted so it is level when the vehicle is placed on level ground. Steering performance will be compromised if the Roof Module is not level when the vehicle is on level ground. See *Figure 6-3*.

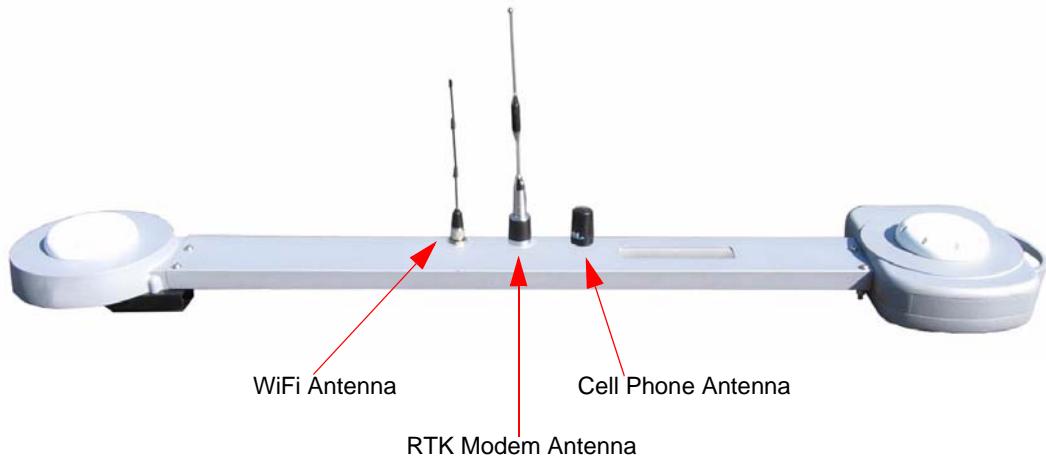
Figure 6-3 Roof Rail Installed



5. Attach the three antennas to the proper Roof Module antenna connections. See *Figure 6-4*.

Note: Hand tighten the connections. Do not over tighten.

Figure 6-4 Attach the Antenna



6. Place the Roof Module onto the Roof Rail. The cable connector must be on the left side of the vehicle, facing the rear. See *Figure 6-5*.

Figure 6-5 Roof Module on Roof Rail



7. Remove the Locking Pin from the Roof Rail. See *Figure 6-6*.

Figure 6-6 Removing the Locking Pin



8. Adjust the Roof Module position on the Roof Rail.
9. Re-insert the Locking Pin to lock the Roof Module onto the vehicle. See *Figure 6-6*.

Note: The Locking Pin can be inserted from either side of the Roof Rail.

Display Installation

This **Display Installation** chapter contains the following Display information:

- *Introduction*
- *Installation Procedure*

Introduction

This manual provides the instructions for installing the RAM Mount Ball so the Display can be attached later. Refer to your Display user manual for instructions on installing the Display.

Note: If the holes shown for mounting the Display bracket are being used by another piece of equipment, other mounting locations can be used.

Installation Procedure

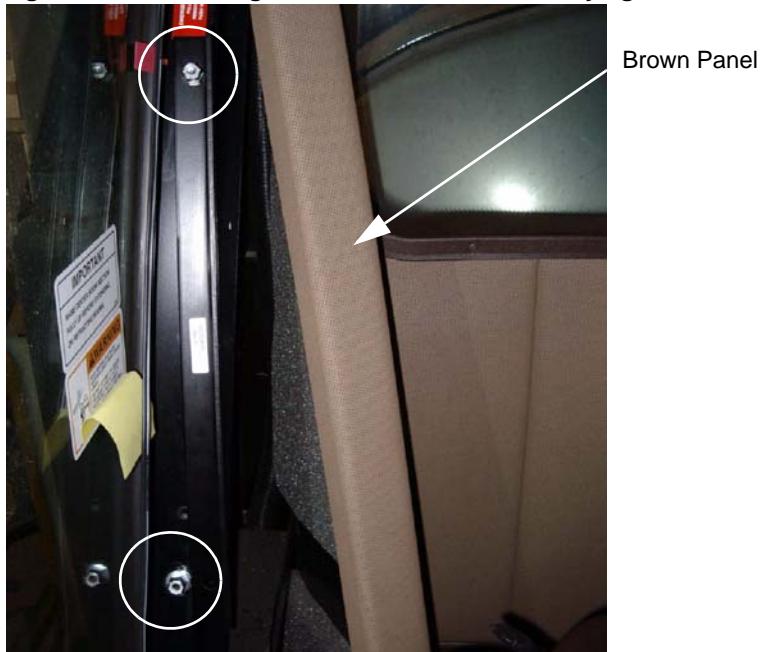
1. *Figure 7-1* shows where to mount the Display Bracket. Install the Display Bracket on the right of the cab (in cabs similar to John Deere combines cabs).

Figure 7-1 Location of the Display Bracket in the Cab



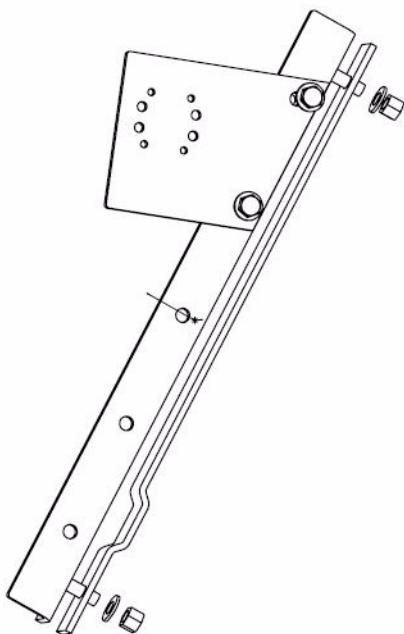
2. Remove the brown panel before installation and identify the two existing mounting bolt/holes as shown in *Figure 7-2*:

Figure 7-2 Removing the Brown Panel and Identifying the Mounting Bolts



3. *Figure 7-3* shows the Display Bracket to use during the installation of the Display in your sprayer's cab. This bracket has a narrow reinforcement strip that must be installed on the back side of the window frame; use the two provided hex screws to clamp the bracket on the window frame.

Figure 7-3 John Deere Display Bracket



Note: The provided Display Bracket is similar to the Bracket used in John Deere combine cabs.

4. Mount the bracket assembly as shown in *Figure 7-4*. Adjust the height as necessary.

Figure 7-4 Mounting the RAM Ball and Bracket



5. Install the RAM Base Ball on the front of the bracket using the four screws and nuts. See *Figure 7-4*.

Note: Refer to the Display user manual for the remaining Display-specific installation instructions.

Connecting System Cables

This **Connecting System Cables** chapter provides information for connecting the Main Cable Harness and the SA Module Cable Harness to the various vehicle and AutoSteer components in the following sections:

- *SA Module Harness*
 - *SA Module Connection*
 - *Wheel Angle Sensor Connection*
 - *Steering Valve Connection*
- *Main Cable Harness*
 - *Roof Module*
 - *Main Cable Harness Connections Inside Cab*
 - *SA Module Harness*
- *Power Supply Connection*
 - *Cab Power Connection*
 - *Battery Power Connection*
- *Install Warning Label*

SA Module Harness

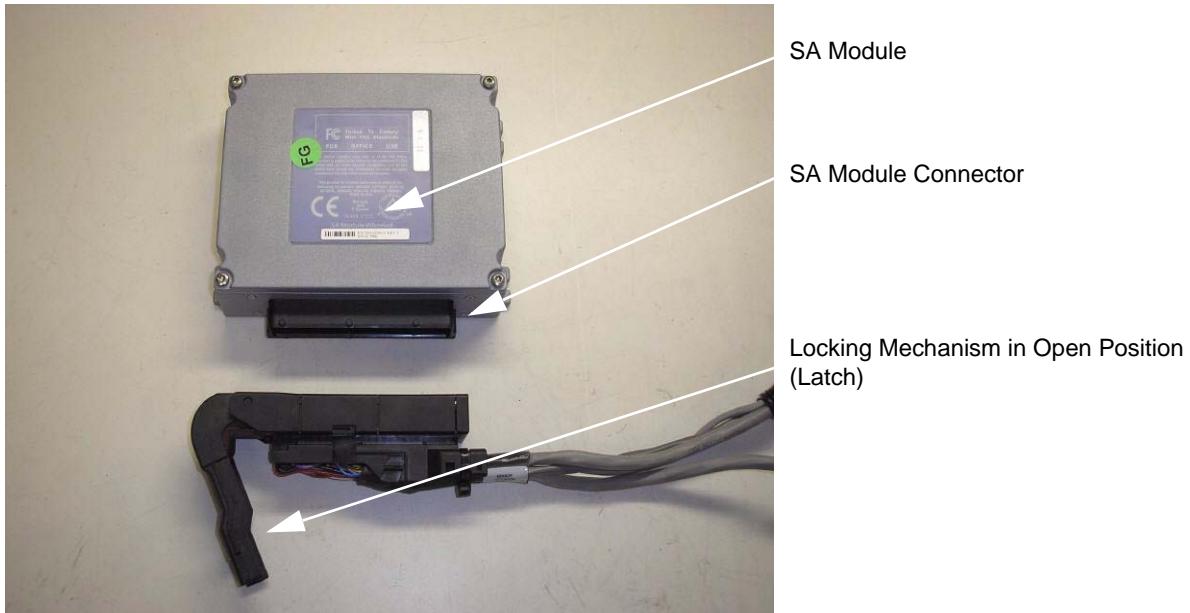
This **SA Module Harness** section contains the following sub-sections:

- *SA Module Connection*
- *Wheel Angle Sensor Connection*
- *Steering Valve Connection*

SA Module Connection

1. Align the SA Module Harness connector to the SA Module. See *Figure 8-1*.
2. Open the connector latch lever. See *Figure 8-1*.

Figure 8-1 Connecting SA Module Connector



3. Press the SA Module Harness connector onto the SA Module connector.

Note: You can damage the connectors if you force them into position. Do not force them together or use tools.

4. Press the latch lever closed until it clicks and locks the connector. See *Figure 8-2*.

Figure 8-2 Closing the SA Module Connector



Note: If you need to disconnect the SA Module connector, you must open the latch lever before attempting to pull the connectors apart.

5. Close the cable connector locking mechanism as shown in *Figure 8-3*.

Figure 8-3 SA Module Connector (closed)



Wheel Angle Sensor Connection

Note: This connection to the Wheel Angle Sensor is only required when using the AutoSteer Wheel Angle Sensor.

1. Route the cable in a protected position and secure it with cable ties. See *Figure 8-4*.

Note: Route the cable along the hoses with sufficient free play to allow steering rotation of the front wheels.

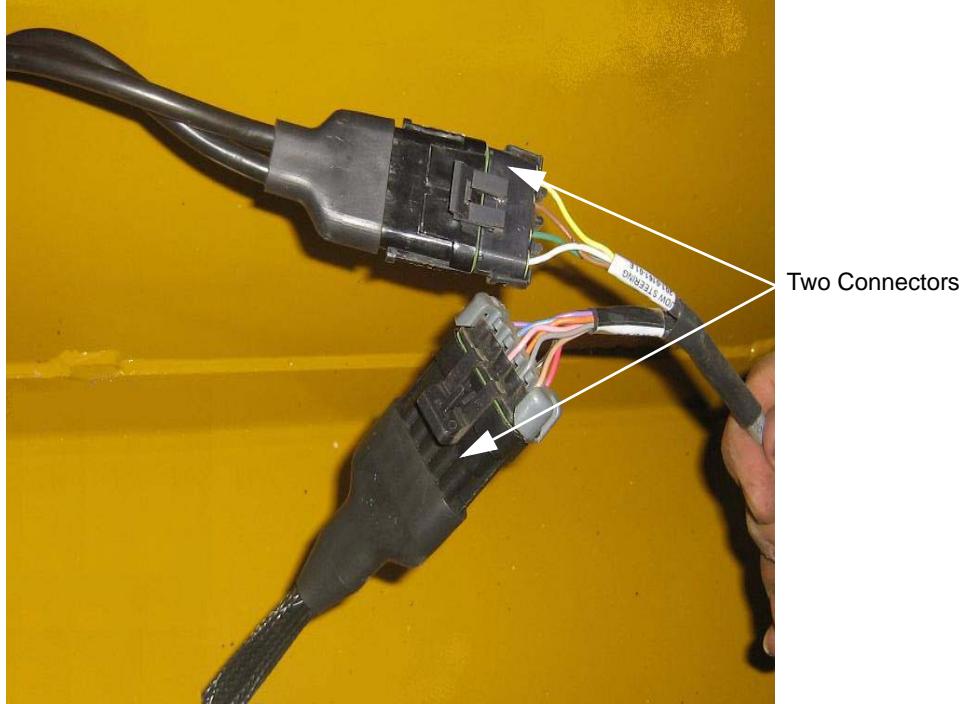
Figure 8-4 Connecting the SA Module Cable Harness to the Wheel Angle Sensor



Steering Valve Connection

1. Route and secure the steering cable from the SA Module to the Steering Valve. Connect the cable to the two valve connectors shown in *Figure 8-5*.

Figure 8-5 Connecting the SA Module Cable Harness to the Steering Valve



Main Cable Harness

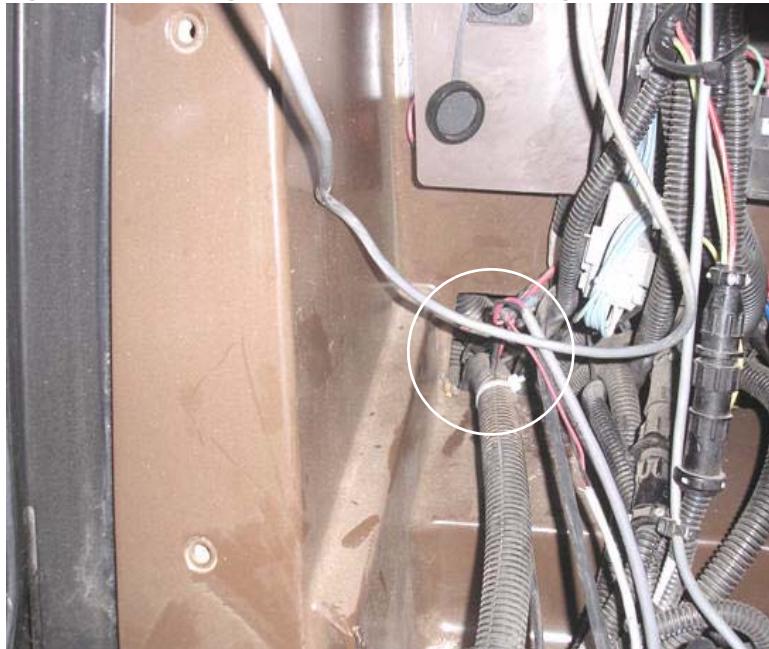
This Main Cable Harness section contains the following sub-sections:

- *Roof Module*
- *Main Cable Harness Connections Inside Cab*
- *SA Module Harness*

Roof Module

1. Route the Main Cable Harness from inside the cab to outside the cab using the existing hole.

Figure 8-6 Routing the SA Module Cable Through the Black Panel



Note: The cable pass-through into the cab should be sealed around the cable with a non-permanent caulking material to maintain the cab air seal integrity.

2. Attach the cable to the Roof Module. See *Figure 8-7*.

Orient the 12-pin connector so the word “TOP” on the cable connector is pointing upwards (towards the sky). Insert the cable connector into the Roof Module. Push the connector in until it “clicks” and locks in place. To remove, grasp the connector to compress the two side latches and pull away from the Roof Module.

Note: Do not force the connector. If the connector does not engage easily, check for the correct orientation of the connector.

Figure 8-7 Roof Module Main Cable Harness Connection



3. Attach the LAN connector to the Roof Module. See *Figure 8-8*.

Orient the Ethernet cable connector with the connector under the receiver so the contacts on the cable connector are pointing towards the back of the vehicle. (This will usually be towards your right side if you are standing on the left side of the vehicle and looking towards the Roof Module.) Slide the cable connector into the receiver and rotate the plastic bayonet sleeve clockwise to lock the connector. The bayonet sleeve will “click” when it fully engages and locks. To remove the cable, rotate the bayonet sleeve counterclockwise until it “clicks” and pull the connector down or away from the Roof Module.

Note: Do not force the connector. If the connector does not engage easily, check for the correct orientation of the connector.

Figure 8-8 Roof Module Ethernet Connection



Main Cable Harness Connections Inside Cab

Figure 8-9 shows the Main Cable Harness connections used inside the cab. Table 8-1 shows the functions of the Main Cable Harness cab connectors. Refer to your Display user manual for instructions on connecting the Main Cable Harness connections shown to the correct ports and harnesses on the Display and Display cables.

Figure 8-9 Main Cable Harness Cab Connections

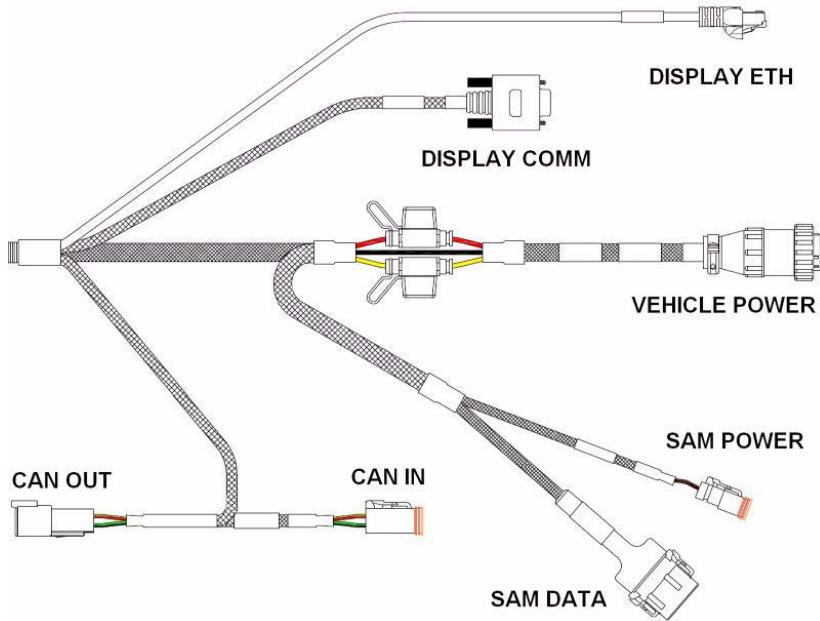


Table 8-1 Cab Main Cable Harness Connector Functions

Main Cable Harness Connector	Connector Function
DISPLAY ETH	Display Ethernet Port (RJ-45)
DISPLAY COMM	Display Communication Port (DB-9)
VEHICLE POWER	12 Volt Power
SAM POWER	Power for SA Module
SAM DATA	Data for SA Module
CAN IN	Not Used for This Installation
CAN OUT	Not Used for This Installation

SA Module Harness

1. Connect the 12-pin data and 2-pin power connectors between the Main Cable Harness and the SA Module Harness. See *Figure 8-10*.

Figure 8-10 Attaching the Main Cable Harness and the SA Module Harness



2. Secure all AutoSteer cables to the vehicle using the cable ties and cable clamps provided. Route all cables in a safe position where they will not be damaged by tall crops or moving parts. Bundle any excess cable and secure it with cable ties.

Power Supply Connection

The following sections describe basic instructions for connecting the AutoSteer system to available vehicle power sources:

- *Cab Power Connection*
- *Battery Power Connection*

Note: Refer to your Display user manual before connecting the AutoSteer system to vehicle power.

The AutoSteer Main Cable Harness must be connected to a 3-pin 12V power source. Your Display user manual provides specific instructions for connecting power to the AutoSteer system and specifies the appropriate vehicle power source.

Cab Power Connection

1. Locate the cab console right-side 12V power outlet. See *Figure 8-11*.
2. Use this 12V accessory power connector if the Display user manual specifies connecting to power inside the cab.

Note: This power cable installation is for vehicles in the United States. European installations may require the power cable adapter PN: 201-0234-01.

Figure 8-11 Cab Power Outlet



Note: A power cable adapter is provided with your kit. When required, use this to connect two systems to a single power outlet.

Battery Power Connection

1. Locate the vehicle battery. See *Figure 8-12*.
2. Connect to the vehicle battery if the Display user manual specifies a direct battery connection.

Figure 8-12 Battery Location



Note: A battery cable is provided with the AutoSteer system when a direct battery connection is required.

Install Warning Label

Install one or more Warning labels on the cab window in a position that is easy to read and does not obstruct the driver's view of the road or surrounding obstacles. See *Figure 8-13*.

Note: Install the warning label with the language that best matches the operator's language. If necessary, install labels in multiple languages. Warning labels are provided in the following languages: English, French, German and Spanish.

Figure 8-13 Warning Label



Post-Installation Procedures and Information

The **Post-Installation Procedures and Information** chapter provides information in the following sections:

- *Hydraulic Leak Check*
- *Create New Vehicle*
- *Steering Cylinder Phasing*
- *Calibration and Tuning Guidelines*

Once the entire AutoSteer system, including the Display and Display harnesses, have been installed on the vehicle, the procedures and notes provided in this chapter must be followed to complete the installation and prepare the vehicle for full AutoSteer capabilities.

Hydraulic Leak Check

On completion of installing the entire AutoSteer system including the Roof Module and Display, the system needs to be checked for leaks. Follow the procedure below to check for leaks.

1. Clear any bystanders away from the vehicle. If there is a hydraulic leak, they could be injured.
2. Put the vehicle into Park and/or set the parking brake to prevent the vehicle from moving.
3. Turn the vehicle over for a few seconds and if the vehicle starts, immediately shut it down.
4. Walk around the vehicle and check all the hydraulic fittings that were opened. Look for any oil leaks.
5. Once all leaks have been repaired, or if none are found, start the vehicle again and let it run at a low idle.

Note: If an oil leak is noticed during any part of this test, immediately shut down the vehicle and repair the leak.

Note: The front wheels will move when the steering wheel is turned. Make sure the vehicle will not strike anything or anyone before continuing. If necessary, move the vehicle to an open area.

6. Take the vehicle out of Park and/or remove the parking brake. Turn the steering wheel manually to the right and left stops two or three times to get any air out of the hoses.
7. Confirm the front wheels turn in the correct direction and that the vehicle steers the same as it did before the system was installed.

8. Put the vehicle back into Park and/or reset the parking brake. Shut down the vehicle, walk around it again, and check for any hydraulic leaks.
9. Once the leaks have been repaired, or if none are found, start the vehicle again and let it run at a low idle.
10. Take the vehicle out of Park and/or remove the parking brake. Move the vehicle to an open, flat area and leave the vehicle in Park.
11. Power up the Display and navigate to the **Hydraulic Valve** window from the **Steering Components** window.
12. Command the vehicle to turn Right and then Left a few times. The vehicle should steer in the direction it is commanded. If the vehicle rotates in the wrong direction, the hoses were attached to the wrong ports on the AutoSteer valve and need to be switched.
13. Power down the Display, put the vehicle back into Park and/or reset the parking brake, and shutdown the vehicle.
14. Once again check the vehicle for hydraulic leaks and repair any that are found.

Create New Vehicle

Note: Do not start the vehicle until after the Hydraulic Leak Test has been performed on the vehicle. After the vehicle has been created, shut down the AutoSteer system prior to starting the vehicle.

Once the entire system has been installed, the operator must first create a new vehicle profile. This configures the system so the User display can properly communicate with the various sensors and components on the vehicle. Follow the procedure below to create a new vehicle.

1. Make sure the User display is not powered ON.
2. Start the vehicle and take it to a clear area (such as an open field) where it can be calibrated.
3. Power up the AutoSteer system.
4. Follow the instructions provided in the Display user manual to create a new vehicle.

Steering Cylinder Phasing

The steering cylinders must be phased so the front wheels are correctly aligned before starting AutoSteer calibration. Refer to your vehicle's owner manual instructions to do so.

Calibration and Tuning Guidelines

Note: For optimal steering performance, the AutoSteer system must be fully calibrated and then tuned.

Final Hardware Installation Checklist

This **Final Checklist** chapter contains the verifications steps necessary after the installation of the AutoSteer system.

Note: The Final Hardware Installation Checklist is on the back of this page. Tear this page out of your manual and fill in the checklist after the installation. You should keep a copy of this checklist for future reference when servicing the vehicle.

Machine Model: _____ Year: _____ Serial #: _____

Customer Name: _____

Location/Address: _____

AutoSteer Installation Kit Part Number: _____

NOTES

Name of Installer: _____ Date: _____

System Installation Checklist

1. Wheel Angle Sensor installed and all fasteners are tight. (optional)
2. Display Bracket and Display are installed and all fasteners are tight.
3. Roof Rail and Roof Module are installed and all fasteners are tight.
4. SA Module is installed and all fasteners are tight.
5. All cable ends are connected.
6. All cables are secured with cable ties.

Hydraulic Installation Checklist

1. Steering Valve Bracket is installed and all fasteners are tight.
2. Steering Valve is installed and all fasteners are tight.
3. All hose fittings are tight.
4. Check for oil leaks on all hydraulic connections.
5. All hoses are routed and secured with cable ties.
6. Manual steering is normal after the AutoSteer installation.
7. Relief Valve is adjusted.

AutoSteer Performance Checklist

1. Complete AutoSteer system calibration.
2. Complete AutoSteer system tuning.
3. Check total Wheel Angle Sensor counts. (optional) Value_____
4. Line acquisition is satisfactory.
5. On-line steering is satisfactory.
6. Manual override (kick-out) is working.
7. Steering speed from lock-to-lock is satisfactory. Value_____ Sec.

Note: See the *Post-Installation Procedures and Information* chapter for additional information.
